ENVIRONMENT NEW BRUNSWICK
ENVIRONNEMENT NOUVEAU-BRUNSWICK

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REVIEW OF THE GROUNDWATER LEVEL MONITORING NETWORK IN NEW BRUNSWICK

NOVEMBER 1984

DEPARTMENTAL REPORT T-8405

BY

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REVIEW OF THE GROUNDWATER LEVEL MONITORING NETWORK IN NEW BRUNSWICK

NOVEMBER 1984

Background

The idea of assembling a Provincial groundwater level monitoring network evolved within the Groundwater Section of New Brunswick Department of the Environment during the period between 1974 and 1978. In this interval it was becoming evident that an increasing number of municipal water supply systems based on groundwater were coming into existence. The Department was seen to have a role to play in accumulating a base of water resource data that would assist the Province in advising municipalities on wellfield management.

Objectives

A program of monitoring water levels in a network of wells at various locations in the Province was commenced. The objective was to collect information from various types of wells on a regular and continuing basis, in order that anomalous situations could be identified and understood. It was intended that the network would include three basic well types, which would allow assessment of different scenarios. Firstly, a baseline sub-network would give a record of natural fluctuations in water levels, allowing an assessment of the effect of climate on groundwater storage, and of topography and geology on the response of groundwater to climatic events. Secondly, a sub-network of water management wells would permit assessments of pumping regimes in various municipalities, and the effects of pumping on water levels in the wellfields. Thirdly, a system of hydrologic-type wells would assist in the definition of the

areal extent of aquifers, and in the determination of sources of recharge to the aquifers.

The task was approached on the basis of establishing an experimental baseline network first, and then following up with the addition of water management and hydrologic stations at later stages of the program. A basic premise was that the network would be developed on a low-cost approach, utilizing existing unused wells wherever possible in order to avoid the costs of drilling wells for the express purpose of monitoring.

History

Federal Government Network:

Water levels in a small number of wells in the Lameque and Caraquet areas were monitored by the Water Survey of Canada through the early and mid 1970's partly as a data input into the study of seawater intrusion problems in these areas. Most of these stations have been discontinued. The Water Survey also recorded water levels in a well in the North Nashwaaksis Stream Basin, in the Royal Road area just northwest of Fredericton, from late 1974 until mid-1978. At this time, problems with the well led to removal of the recorder. At the date of writing, Water Survey was still operating three groundwater stations, one at Caraquet and one at Chatham, both installed in mid-1978,and one at New Maryland, south of Fredericton, which was installed in early 1979. For locations of all wells currently in the network, refer to Figure 1.

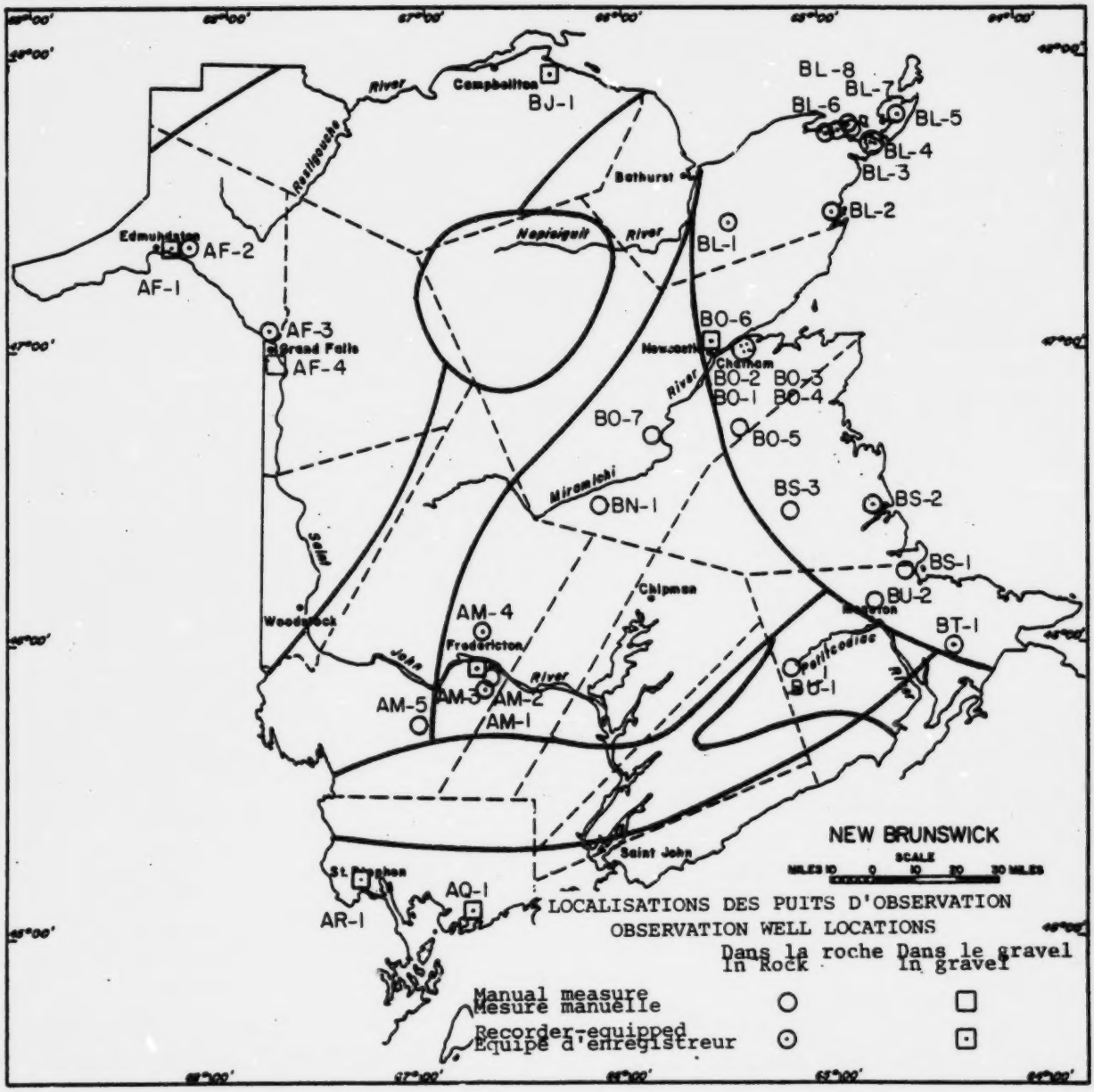

Figure 1: Hydrogeological Regions and Observation Well Locations, November 1984.
Régions Hydrogéologiques et Localisations des Puits d'Observation, novembre 1984.

Provincial Baseline Subnetwork:

The opportunity for the Province to assemble a core network of baseline wells arose from the drilling of a series of regional coal exploration holes in the sedimentary rocks of the Carboniferous Basin by New Brunswick Department of Natural Resources in 1977 and 1978. These holes, drilled for stratigraphic information and to define coal occurrences, were abandoned after drilling. It was recognized that they represented a low-cost access system for the measurement of groundwater levels and of physical and chemical groundwater conditions, so an arrangement was made to transfer responsibility for a selected number of the holes from Department of Natural Resources to Department of the Environment. Monitoring of water levels in these holes was commenced in the spring of 1979. A few more wells originating from other projects were added to the baseline subnetwork between 1979 and 1981, to broaden the area of coverage and include some locations outside the Carboniferous Basin. During the same period, a number of the original wells were discontinued because of technical problems or lack of response to changing weather conditions.

Most of the baseline wells are measured manually, on a monthly interval, supplying data on groundwater level fluctuations in non-pumping situations. Baseline wells at Allardville, Grand Falls, and a station re-established in a new well on Royal Road near Fredericton, are equipped with continuous water level recorders.

Provincial Water-Management Subnetwork:

Between early 1980 and early 1982, a wellfield management pilot project was conducted in northeastern New Brunswick by the Groundwater Section. The purpose was to monitor and analyze pumping effects on groundwater levels in several smaller municipalities, leading to recommendations on how the municipalities should manage pumping regimes for their wells. A maximum of 14 observation wells were equipped with recorders at the height of the project, and of these, 6 are still operational in the Provincial network.

Besides the monitoring activities of the Northeast Pilot Project, additional emphasis was placed on the water management aspect of the Observation Well Network, commencing in 1980. A need was recognized to monitor pumping levels in the groundwater system in the Chatham wellfield, in order to help to define and avoid a seawater intrusion problem that had been plaguing the town for some years. The first recorder was installed on the Wellington Street well in the downtown area in September 1980. Monitoring of this well has since been discontinued, but the commitment to groundwater management in Chatham has continued, with three other Provincially-operated observation wells having been brought into the network between 1981 and 1983, which are providing information on the Chatham wellfields.

In parallel with the objectives of the Northeast Pilot Project and the Chatham efforts, the trend in the remainder of the province since 1980 has been towards water-management

type installations. Observation wells that reflect pumping regimes have been installed in municipal wellfields at Pennfield, St. Stephen, Newcastle, Bouctouche, Charlo, St. Basile and Fredericton to facilitate the analysis of stresses being put on these aquifers.

To date, no observation wells have been established in this program that can be thought of as having purely hydrologic functions in terms of their potential to define the processes of recharge to aquifers. This function appears to be evolving as a subordinate issue relative to the optimization of the baseline and water-management divisions of the network.

The New Brunswick observation well network as of the date of writing comprised a total of 34 actively observed wells, of which 24 are equipped with automatic recorders and 10 are measured manually.

Information on observation wells that were active at the time of completion of this report is presented in the appendix. Limited information on most of the discontinued wells is available by special request from the offices of the Groundwater Section, New Brunswick Department of the Environment, Fredericton.

Technical Aspects of the Network

The Provincial network utilizes a variety of water level recording equipment, including a number of Leupold and Stevens A-71 and F-type recorders and one L & S A-35. The lack of standardization of equipment is largely a result of the fact that most of the original units in the

network were obtained used from other organizations. All new recorders purchased by the Province in recent years have been A-71 units, which offer simplicity, relatively easy maintenance, a potential 4½ month operating duration between chart changes, and conformity with the equipment used in the Federal network.

Approximately 3/4 of the units record in Imperial measure, while the remainder are metric. This again is a result of the pre-1980 origin of the equipment. Any new recorders purchased recently are calibrated in metric measure, and the Section is considering the practicality of converting others to metric function.

Wellheads have been housed in steel barrels, wooden sheds, concrete culverts and occasionally in existing pumphouses. The steel barrel installations have been found to be unsuitable for long-term installations because of difficulty in making them secure, and also because wind leakage sometimes causes irregularities in the water level trace. Wooden sheds provide fair protection and allow easy access for servicing, although problems with vandalism in some localities make them impractical. Large diameter concrete culverts, set on end partly below ground level with a bolt-on steel cover, are economical to install, durable and maintenance-free, and are reasonably secure against vandalism. Servicing is a little more difficult in these cramped quarters. Frost accumulation inside the culverts in winter is being watched as a possible cause for recorder failure. Pumphouses make excellent installations, but are obviously seldom available.

Specific Observations and Conclusions Regarding Water Level Behaviour

The following items have become evident after study of the water-level graphs:

Baseline-type observation wells have limited usefulness in low-elevation, near-coastal situations, as sea level is a limiting factor on low water level.

Wells of shallow and moderate depth (100 - 400') located in upland areas have a relatively large annual range of water levels. This presumably reflects a filling-and-draining process in the upper aquifer zone of a recharge area.

The few deep wells in the Carboniferous, with depths of 1,000 ft, exhibit very narrow annual ranges of water levels, indicating that recharge of the deep aquifer zones is usually very consistent.

The deep well at Harcourt, which shows a sustained water level decline throughout 1982 and 1983, may be exhibiting the effects of a climatic trend of longer term than the annual response.

Recommendations

The following recommendations are made based on this review of the New Brunswick observation well network:

Establish up to 6 additional baseline stations in areas of pre-Carboniferous bedrock.

Water-management stations should be added in as many municipalities as possible that are using a groundwater supply.

Any municipality that is drilling new exploration wells should be requested to design its drilling program such that one hole will be suitable as a long-term observation point. The Department should request the municipality to supply a recorder for the well.

All water level figures should be recorded and quoted as metric geodetic elevations, to avoid confusion.

Past-years' figures for any active wells that are not recorded on standard annual digit sheets should be re-plotted on these standard forms, for the sake of uniformity and accessibility.

The Groundwater Section should move towards full metrication of the network through conversion and in some cases replacement of old equipment.

The Section should move as rapidly as possible towards computer storage of the data from the Observation Well Network, to streamline the retrieval of significant data pieces. The potential for computer production of printed graphic representations of water level data should be strongly considered.

A program of re-surveying all wellhead elevations should be undertaken over the next 2 years. If significant changes from the original surveyed elevations are noted, this program should be repeated on a 5 year cycle.

NOTES:

APPENDIX

Observation Well Data

Arrangement of Appendix

The wells are arranged in the appendix according to the major bedrock hydrogeological units within whose geographic areas they fall. Starting with the Fredericton area wells at the southwestern extremity of the Carboniferous Basin hydrogeological unit, they are presented in the order in which they would most likely be encountered in a driving circuit of the entire network, conducted in a counter-clockwise direction around the Province. In this way, all wells in each of the major hydrogeological units are treated as a group, and in addition, wells that are adjacent geographically are also adjacent in the appendix. The anticipated useage of the appendix would commonly see the user referring to several wells within a localized lithologic and/or climatic context.

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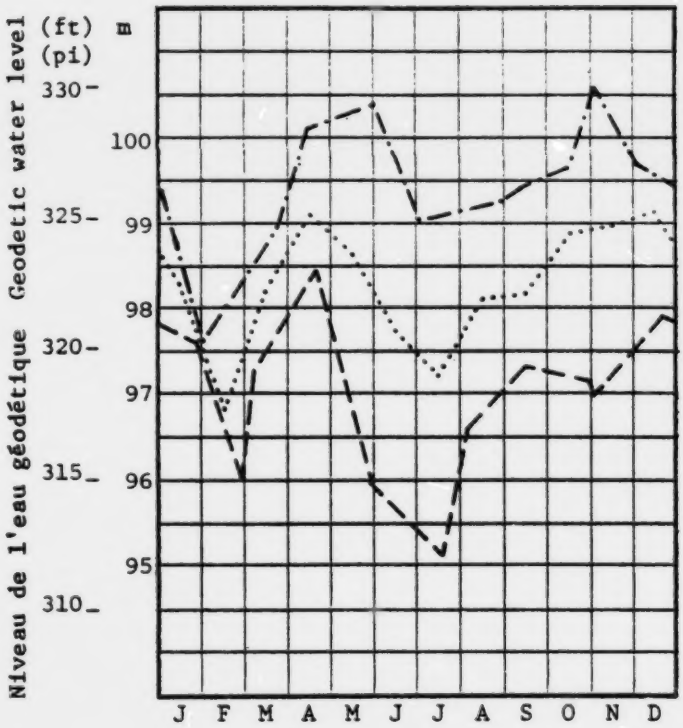
REGION 1

WESTERN CARBONIFEROUS BASIN

BASSIN CARBONIFERE OUEST



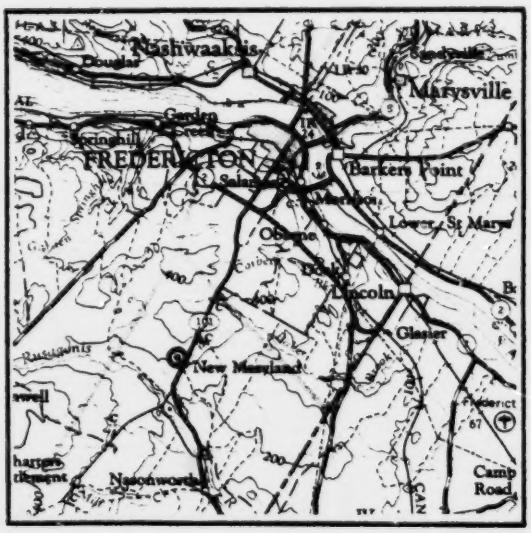
LEGEND-LÉGENDE
Water level traces
Graphiques des niveaux de l'eau

Record monthly maximum
Maximum record mensuel

Record monthly minimum
Minimum record mensuel

Monthly average
Moyen mensuel

Trace positions are approximate between flexure points
Positions des tracés sont approximatives entre les points d'inflexion



1:250,000

Comments:
Commentaires:

Snowmelt recharge event Mar-Apr; typical 2-peak recharge pattern. Wide range reflects pumping stress in nearby subdivisions.

Evénement d'alimentation de la fonte des neiges en mars-avril; modèle typique de deux pointes. Grande variation reflète le pompage accentué dans les lotissements à proximité.

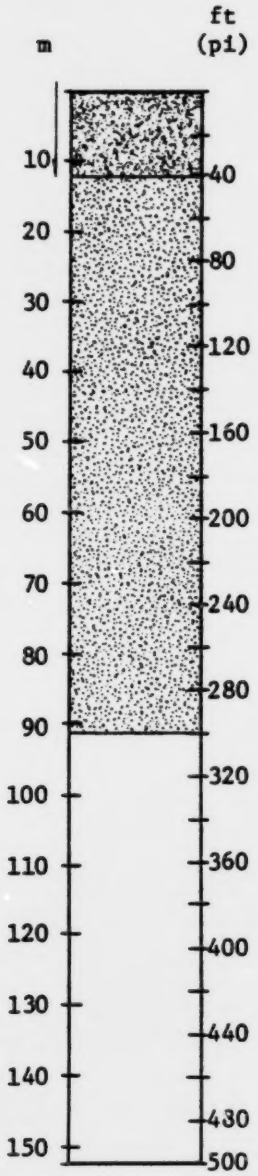
Well name Nom du puits	Recorder Type de l' Enrégistreur	Date of/de l' Instrumentation	Date of/du Termination Terminaison	Current Status Présent	Data recovery Reprise des données, %
New Maryland (AM-1)	A-35 met.	1979-04		Active water-management Actif;gestion des eaux.	80.3%

Lithologie des unités

Dépôts meubles

Tubage

Il n'y a pas de rapport lithologique sur dossier. La roche est supposée être du grès avec du siltstone et/ou du schiste argileux alternatif



Lithology of units

Overburden

Casing

There is no lithologic log on record. Rock is assumed to be sandstone alternating with siltstone and/or shale

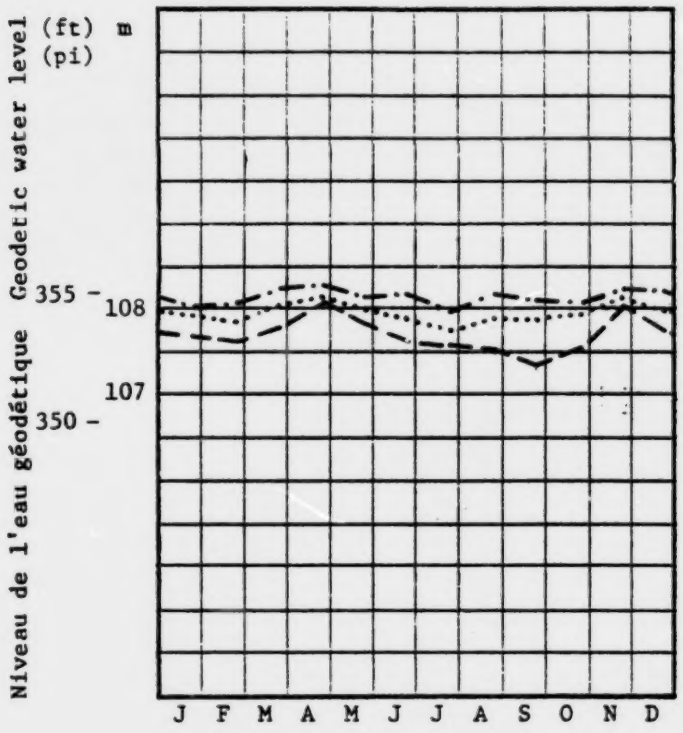
Puits d'observation New Maryland (AM-1) Observation well

Date du forage 1979-02-20 Date drilled

Niveau de l'eau statique original _____ Original static water level

Elévation du haut du tubage 109.13m (358.03 ft.) Elevation of casing top

Origine du puits Foré pour M.E.N.B./Drilled for NBDOE Origin of well.



LEGEND-LÉGENDE
Water level traces
Graphiques des niveaux de l'eau

Record monthly maximum
Maximum record mensuel

Record monthly minimum
Minimum record mensuel

Monthly average
Moyen mensuel

Trace positions are approximate between flexure points
Positions des tracés sont approximatives entre les points d'inflexion

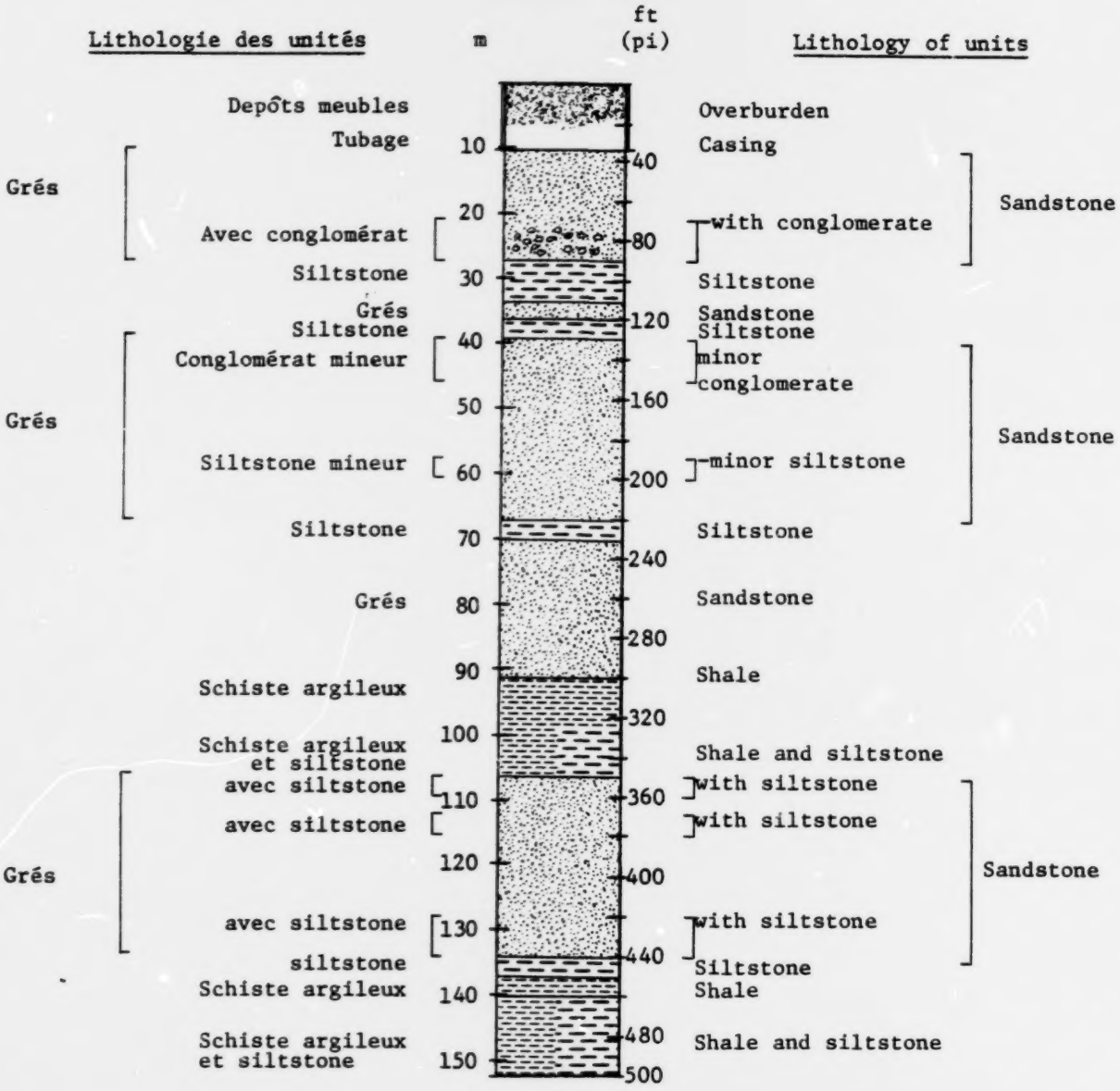
1:250,000

Comments:
Commentaires:

Very stable water level, but still reflects two-peak recharge pattern. Snowmelt recharge event March-April.

Niveau d'eau trés stable, mais montrant quand même un modéle d'alimentation de deux sommets. Evénement d'alimentation de la fonte des neiges en mars-avril.

Well name Nom du puits	Recorder Type de l' Enrégistreur	Date of/de l' Instrumentation	Date of/du Termination Terminaison	Current Status Présent	Data recovery Reprise des données, %
Fredericton Rue Regent St. D.O.T. (AM-2)	Manual Manuel	1979-04		Active Baseline Actif Fondemental	n.a.



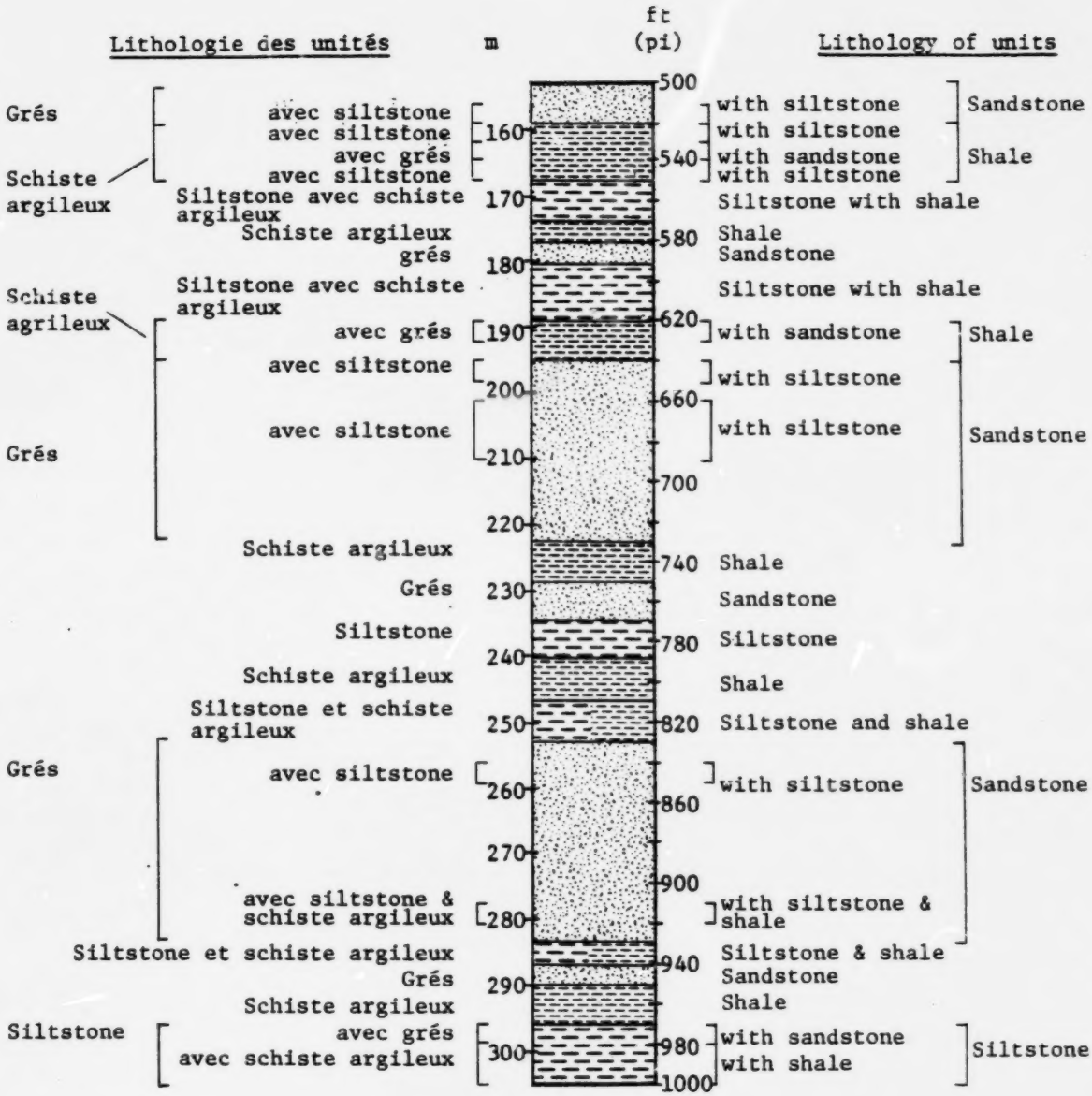
Puits d'observation Fredericton Regent St. DOT (AM-2) Observation well

Date du forage 1978-01-23 Date drilled

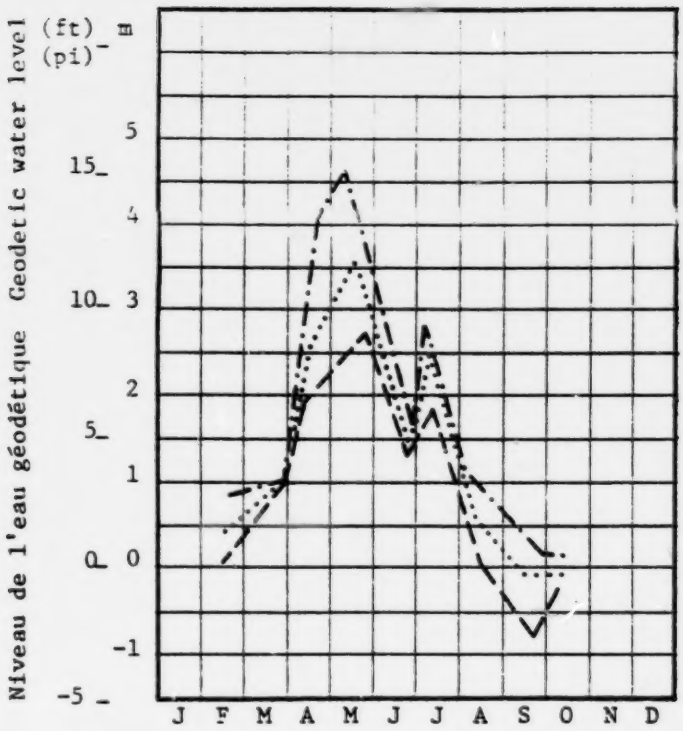
Niveau de l'eau statique original 3.05m (10 ft) Original static water level

Elévation du haut du tubage 110.46m (362.40 ft) Elevation of casing top

Origine du puits DNR Carboniferous test hole #1269 Origin of well



Puits d'observation Fredericton Regent St. DOT (AM-2) Observation well



LEGEND-LÉGENDE
Water level traces
Graphiques des niveaux de l'eau

Record monthly maximum
Maximum record mensuel

Record monthly minimum
Minimum record mensuel

Monthly average
Moyen mensuel

Trace positions are approximate between flexure points
Positions des tracés sont approximatives entre les points d'inflexion

1:250,000

Comments:
Commentaires:

Water level reflects influence of nearby pumping wells.

Niveau de l'eau reflète l'influence des puits de pompage à proximité.

Well name Nom du puits	Recorder Type de l' Enrégistreur	Date of/de l' Instrumentation	Date of/du Termination Terminaison	Current Status Présent	Data recovery Reprise des données, %
Fredericton Wilmot Park (AM-3)	A-71 Met.	1984-01		Active; water management Actif; gestion des eaux.	32%

Lithologie des unités

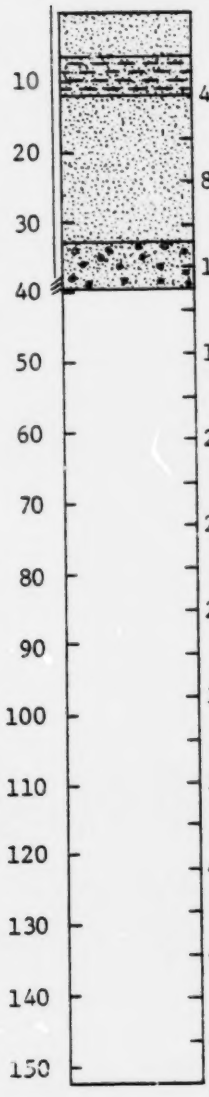
Sable moyen

Sable moyen, matrice argileuse

Sable, moyen-grossier

Gravier fin, grossier-sableux

Écran de 25-rainures sur le dernier 1·5m



Lithology of units

Medium sand

Medium sand, clayey matrix

Sand, medium-coarse

Coarse-sandy fine gravel

25-slot screen in bottom 5 ft.

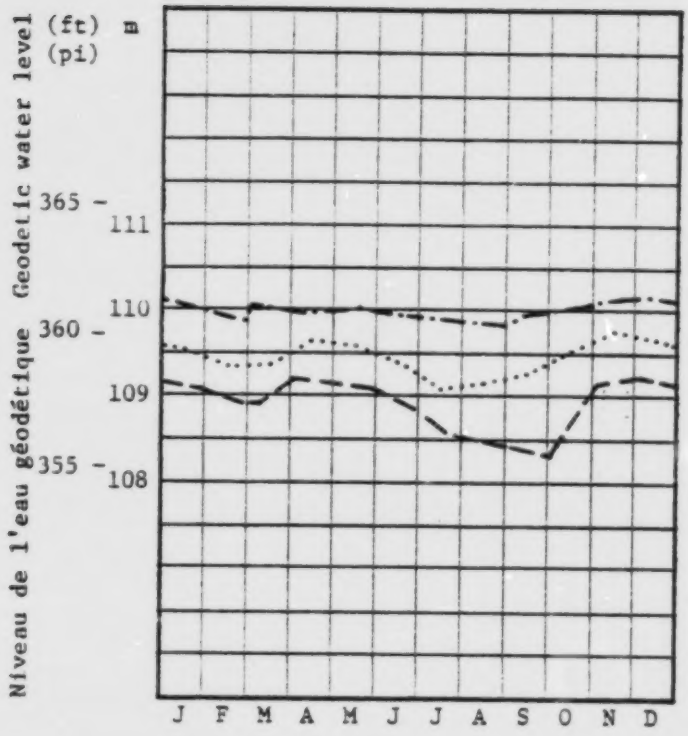
Puits d'observation Fredericton Wilmot Park (AM-3) Observation well

Date du forage 1984-01-20 Date drilled

Niveau de l'eau statique original 9.75m (32 ft) Original static water level

Elévation du haut du tubage 10.85m (35.61 ft) Elevation of casing top

Origine du puits Foré pour M.E.N.B./Drilled for NBDOE Origin of well



LEGEND-LÉGENDE
Water level traces
Graphiques des niveaux de l'eau

Record monthly maximum
Maximum record mensuel

Record monthly minimum
Minimum record mensuel

Monthly average
Moyen mensuel

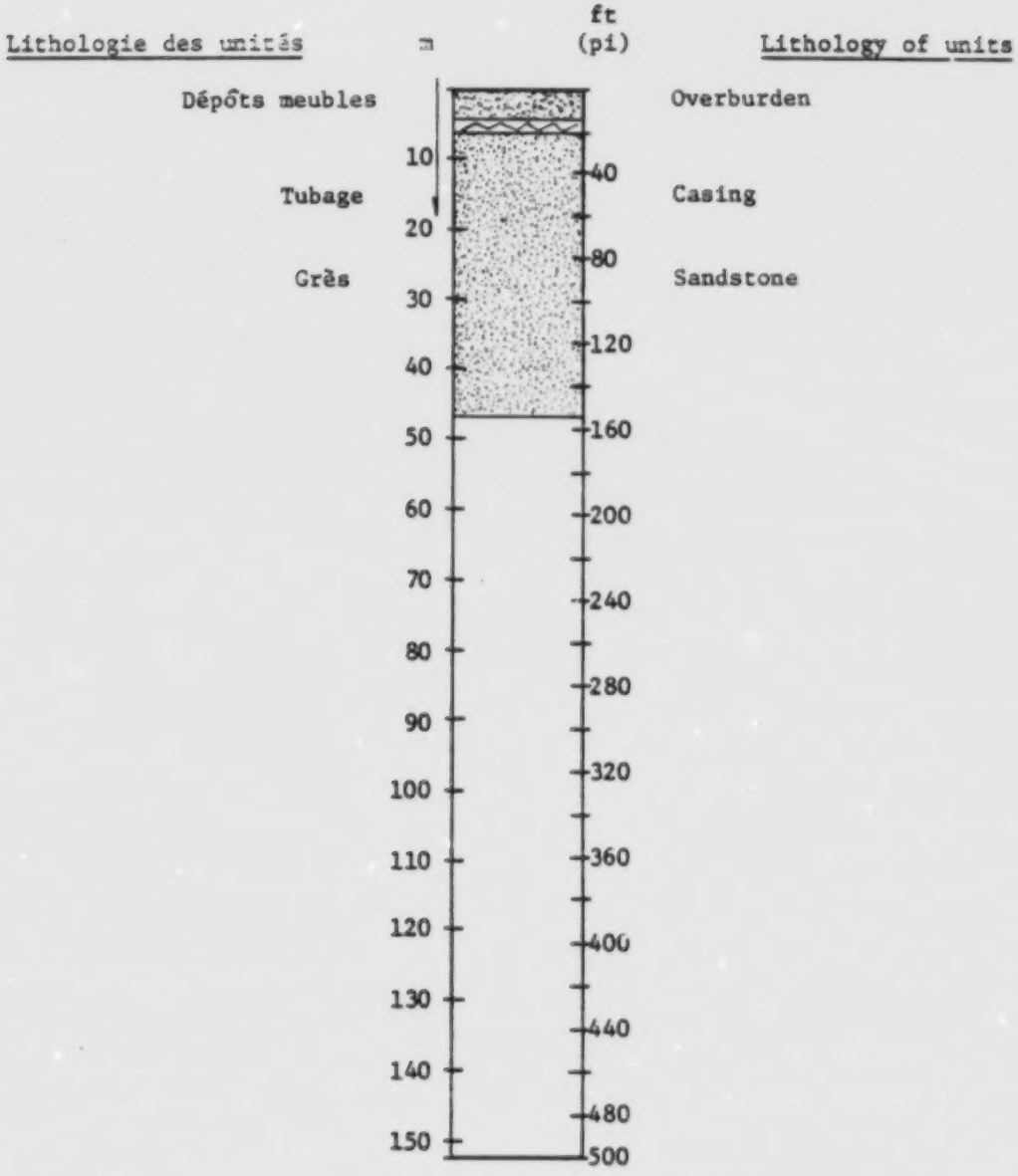
Trace positions are approximate between flexure points
Positions des tracés sont approximatives entre les points d'inflexion

1:250,000

Comments:
Commentaires:
Snowmelt recharge event late Mar-early May; typical 2-peak pattern.

Evênement d'alimentation de la fonte des neiges en fin mars-début mai; modèle typique de deux sommets.

Well name Nom du puits	Recorder Type de l' Enrégistreur	Date of/de l' Instrumentation	Date of/du Termination Terminaison	Current Status Présent	Data recovery Reprise des données, %
Fredericton Royal Road (AM-4)	F-type Imp.	1980-08		Active Baseline Actif Fondemental	92.6%



Puits d'observation Fredericton Royal Road (AM-4) Observation well

Date du forage 1979-03 Date drilled

Niveau de l'eau statique original _____ Original static water level

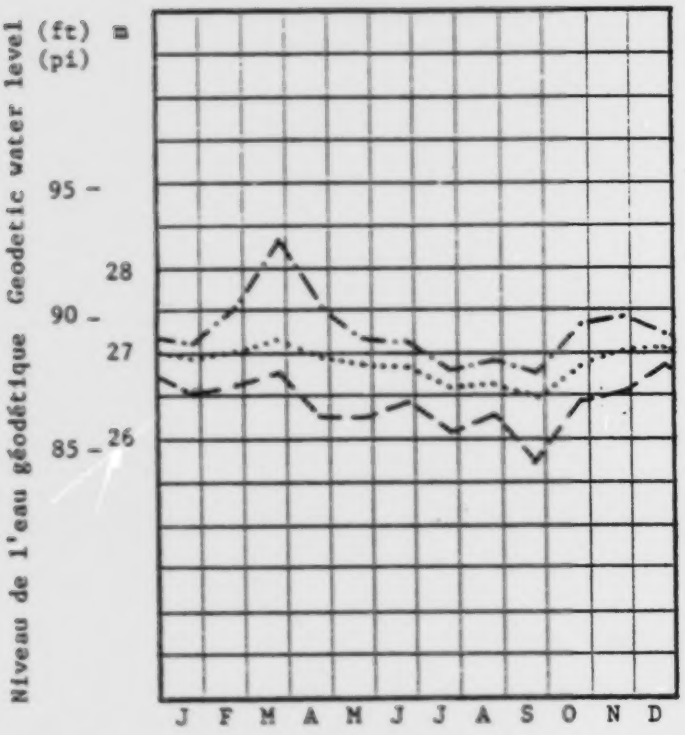
Elévation du haut du tubage 120.81m (396.36 ft.) Elevation of casing top

Origine du puits Drilled for NBDOE Origin of Well
(lith. log from driller's memory)
Foré pour M.E.N.B. (lithologie de la mémoire du foreur)

REGION 2

EASTERN AND CENTRAL CARBONIFEROUS BASIN

BASSIN CARBONIFERE EST ET CENTRALE



LEGEND-LÉGENDE
Water level traces
Graphiques des niveaux de l'eau

Record monthly maximum
Maximum record mensuel

Record monthly minimum
Minimum record mensuel

Monthly average
Moyen mensuel

Trace positions are approximate between flexure points
Positions des tracés sont approximatives entre les points d'inflexion

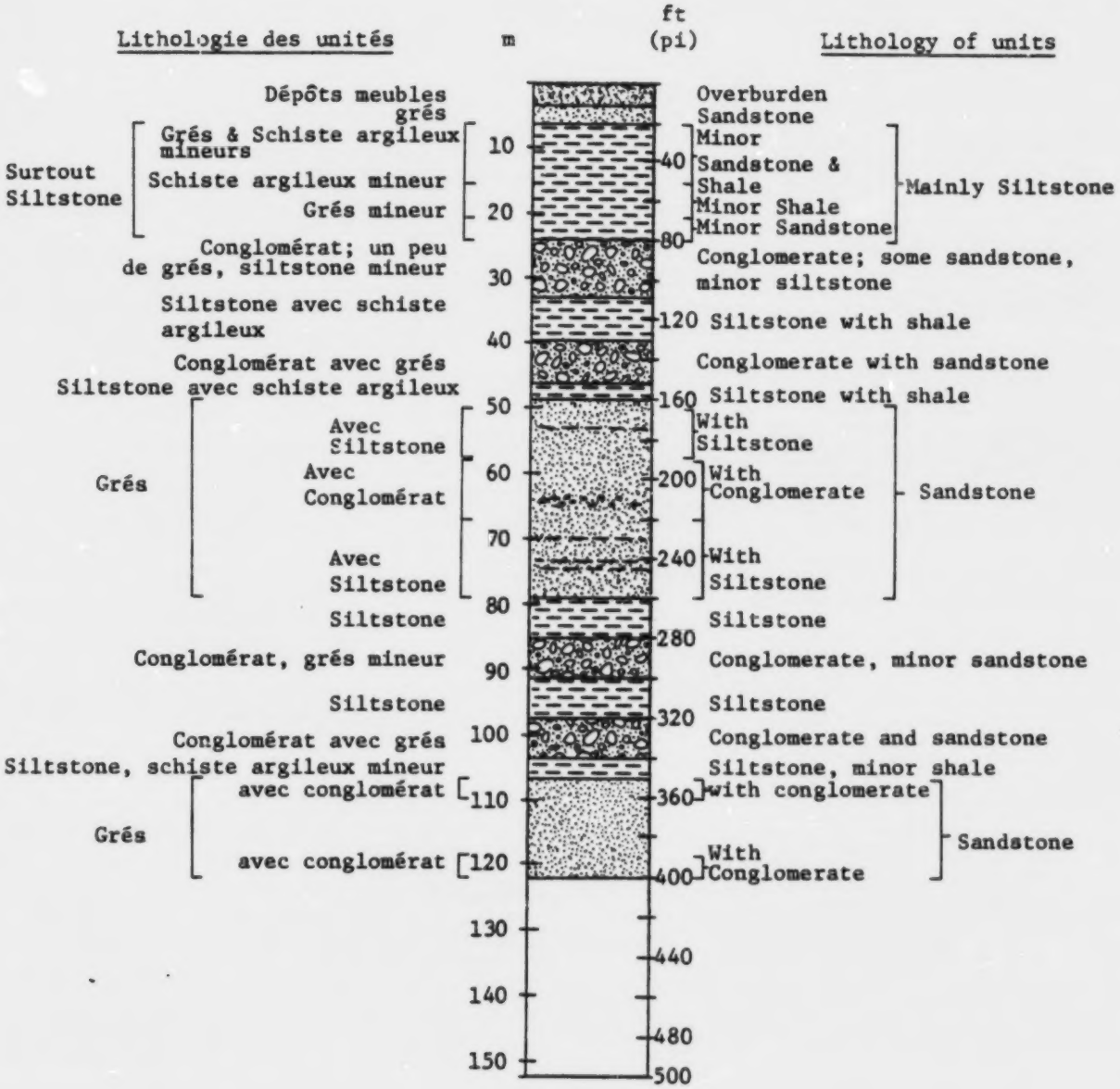
1:250,000

Comments: -
Commentaires:

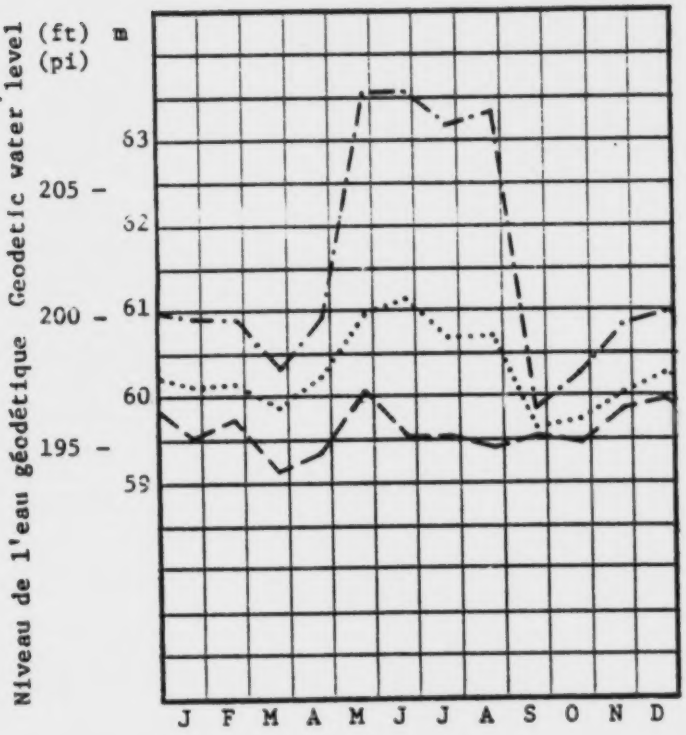
Snowmelt infiltration event Feb-Mar; typical but subdued two-peak response pattern.

Evénement d'infiltration de la fonte des neiges en février-mars; modèle typique mais modéré de deux sommets.

Well name Nom du puits	Recorder Type de l' Enrégistreur	Date of/de l' Instrumentation	Date of/du Termination Terminaison	Current Status Présent	Data recovery Reprise des données, %
Petitcodiac D.O.T. M.D.T. (BU-1)	Manual Manuel	1979-04		Active Baseline Actif Fondemental	n.a.



Puits d'observation	M.D.T. Petitcodiac D.O.T. (BU-1)	Observation well
Date du forage	1978-07-27	Date drilled
Niveau de l'eau statique original	4.57 m (15 ft)	Original static water level
Elévation du haut du tubage	28.38m (93.10 ft)	Elevation of casing top
Origine du puits	D.N.R. Carboniferous testhole #258	Origin of well



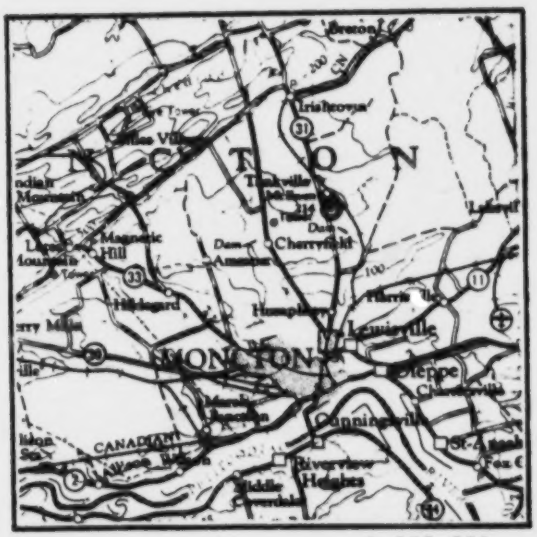
LEGEND-LÉGENDE
Water level traces
Graphiques des niveaux de l'eau

Record monthly maximum
Maximum record mensuel

Record monthly minimum
Minimum record mensuel

Monthly average
Moyen mensuel

Trace positions are approximate between flexure points
Positions des tracés sont approximatives entre les points d'inflexion

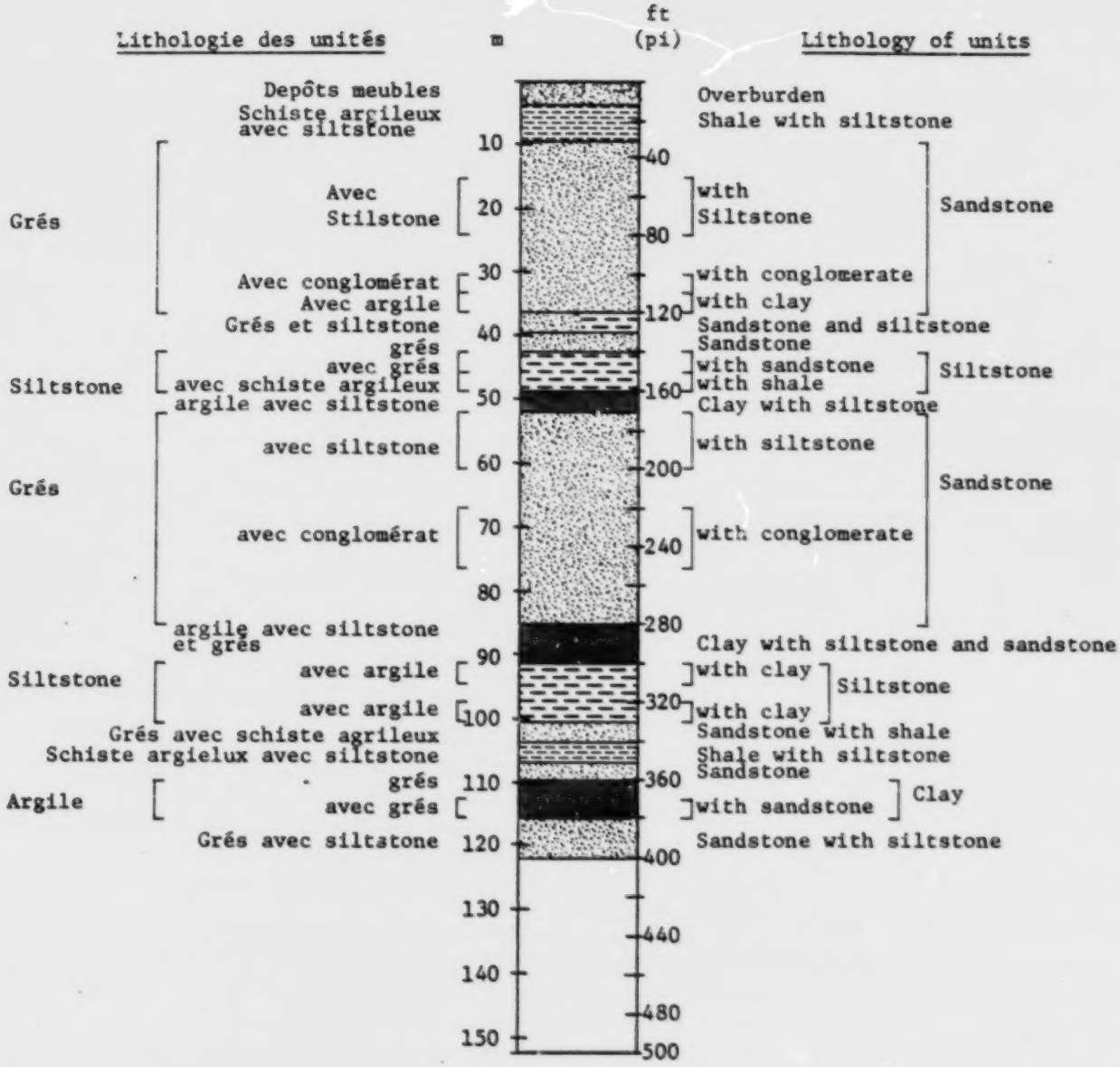


1:250,000

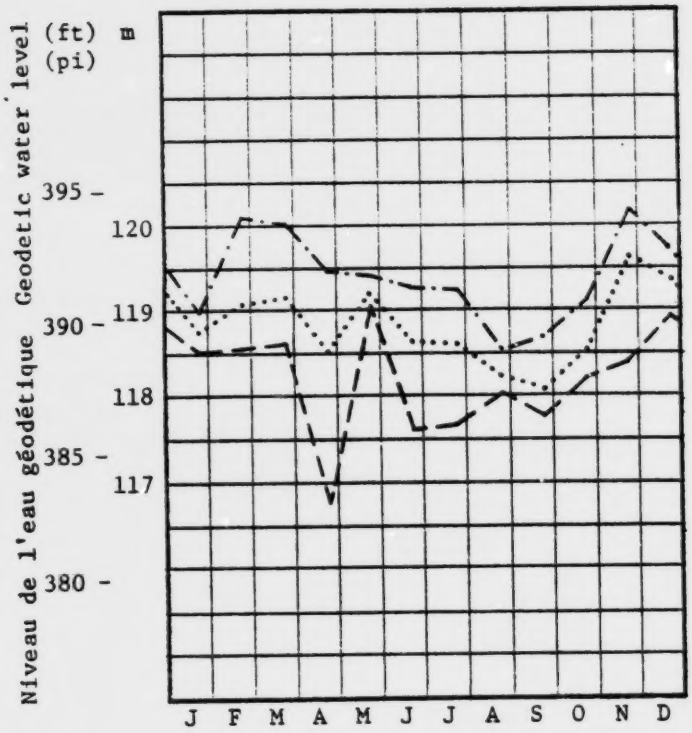
Comments: Graph shows maximum water levels in late spring and summer, possibly because of position in downstream end of a deep flow system. Proximity to surface reservoir may also affect levels. May-Aug record maxima reflect unusual levels in 1982.

Commentaires: Le graphique indique le niveau de l'eau maximale pendant la fin du printemps et l'été, ceci possiblement dû à la position avale d'un systeme d'écoulement profond. La proximaté d'un réservoir de surface pourrait aussi avoir des effets sur le niveau de l'eau du puits. Le record maximal de mai-août refléte des niveaux peu commun en 1982.

Well name Nom du puits	Recorder Type de l' Enrégistreur	Date of/de l' Instrumentation	Date of/du Termination Terminaison	Current Status Présent	Data recovery Reprise des données, %
Tankville (BU-2)	Manual Manuel	1979-04		Active baseline Actif fondemental	n.a.



Puits d'observation	Tankville (BU-2)	Observation well
Date du forage	1978-08-07	Date drilled
Niveau de l'eau statique original	2.13m (7 ft)	Original static water level
Elévation du haut du tubage	70.64m (231.76 ft)	Elevation of casing top
Origine du puits	DNR Carboniferous testhole #192	Origin of well



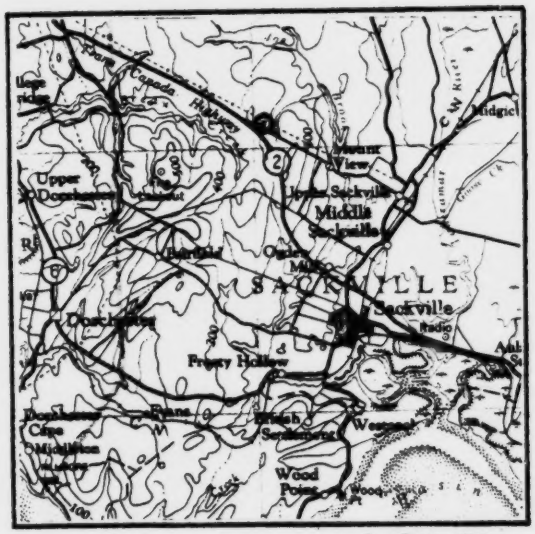
LEGEND-LÉGENDE
Water level traces
Graphiques des niveaux de l'eau

Record monthly maximum
Maximum record mensuel

Record monthly minimum
Minimum record mensuel

Monthly average
Moyen mensuel

Trace positions are approximate between flexure points
Positions des tracés sont approximatives entre les points d'inflexion



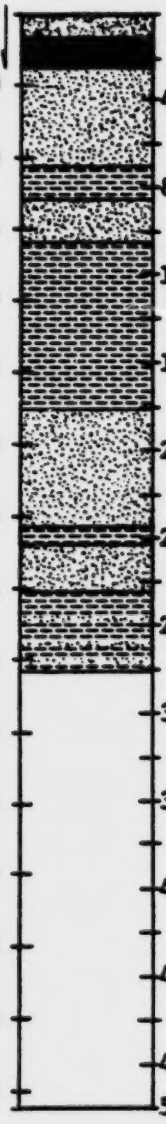
1:150,000

Comments:
Commentaires:
Early snowmelt recharge event Feb-Mar reflects moderate coastal climate. Unusually high minimum level in May creates an atypical average level graph.

Evénement hâtif d'alimentation de la fonte des neiges en février-mars reflète un climat côtier modéré. Niveau minimum élevé inhabituel en mai, produit un graphique atypique de niveau moyen.

Well name Nom du puits	Recorder Type de l' Enrégistreur	Date of/de l' Instrumentation	Date of/du Termination Terminaison	Current Status Présent	Data recovery Reprise des données, %
Sackville Mount View Road (BT-1)	Manual Manuel F-type	1980-03 1984-06-26		Active (baseliue) Actif (fondemental	n.a.

Lithologie des unités	m	ft (pi)	Lithology of units
Dépôts meubles; sable limoneux et roche cassée			Overburden; silty sand and broken rock
Argile			Clay
Tubage			Casing
Grès	10	40	Sandstone
Schiste argileux	20	80	Shale
Grès			Sandstone
Schiste argileux	30	120	Shale
	40		
	50	160	
Grès	60	200	Sandstone
Schiste argileux	70	240	Shale
Grès			Sandstone
Schiste argileux, couches intercalées de grès	80	280	Shale, sandstone interbeds
	90		
	100	320	
	110	360	
	120	400	
	130	440	
	140	480	
	150	500	



Puits d'observation Sackville Mount View Road (BT-1) Observation well

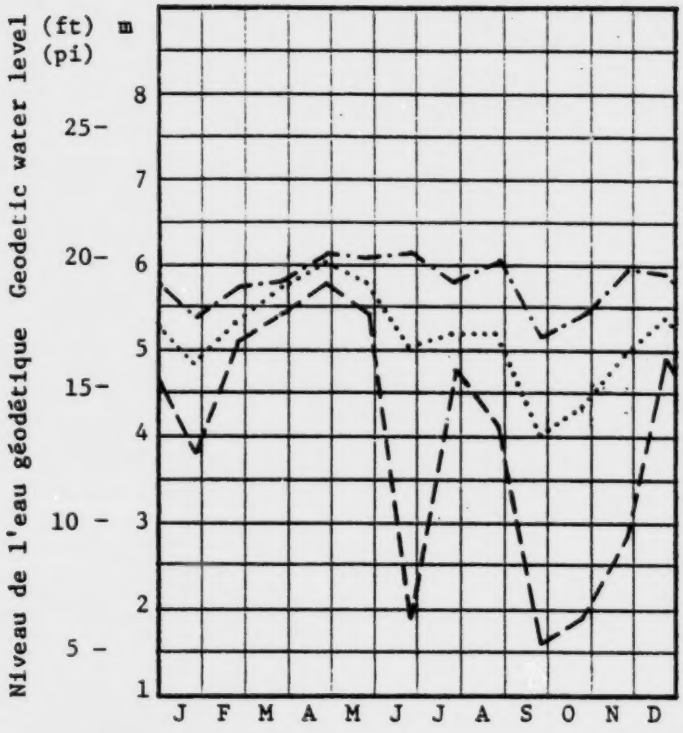
Date du forage 1979-09-22 Date drilled

Niveau de l'eau statique original 8.41m (27.7 ft) Original static water level

Elévation du haut du tubage 126.28m (414.30 ft) Elevation of casing top

Origine du puits TH4, Hydrogeol. proposed landfill site. Origin of well

Site proposé pour enfouissement, Hydrogeol TH4



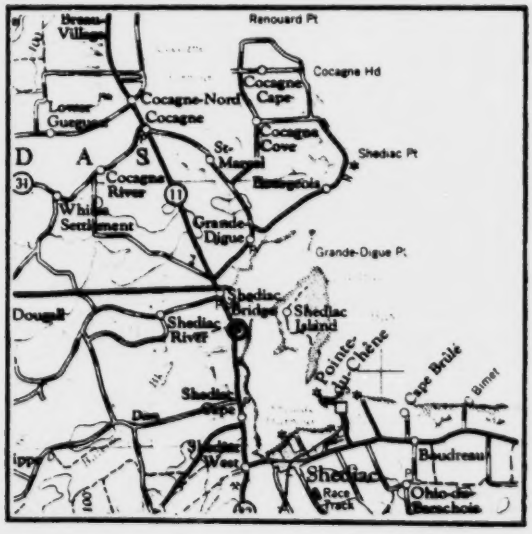
LEGEND-LÉGENDE
Water level traces
Graphiques des niveaux de l'eau

Record monthly maximum
Maximum record mensuel

Record monthly minimum
Minimum record mensuel

Monthly average
Moyen mensuel

Trace positions are approximate between flexure points
Positions des tracés sont approximatives entre les points d'inflexion



1:250,000

Comments:
Commentaires:

Located in near-coastal situation may reflect tidal influence.

Situé dans un endroit côtier; reflète probablement l'influence des marées.

Well name Nom du puits	Recorder Type de l' Enrégistreur	Date of/de l' Instrumentation	Date of/du Termination Terminaison	Current Status Présent	Data recovery Reprise des données, %
Shediac Bridge (BS-1)	Manual Manuel	1979-04		Active Baseline Actif Fondemental	n.a.

Lithologie des unités	m	ft (pi)	Lithology of units
Dépôts meubles, sable & argile			Overburden, sand & clay
Grès	10	40	Sandstone
Tubage			Casing
Schiste argileux			Shale
Grès	20		Sandstone
Schiste argileux		80	Shale
Grès	30		Sandstone
Schiste argileux	40	120	Shale
Grès	50	160	Sandstone
Schiste argileux	60	200	Shale
Grès	70	240	Sandstone
Schiste argileux	80		Shale
Grès	90	280	Sandstone
	100	320	
	110	360	
	120	400	
	130	440	
	140	480	
	150	500	

Puits d'observation Shediac Bridge (BS-1) — Observation well

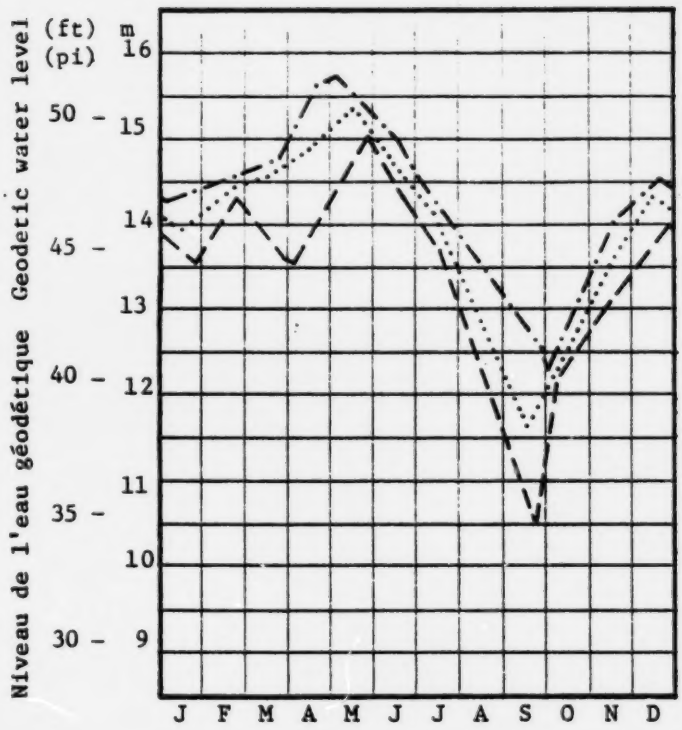
Date du forage 1977-10-10 — Date drilled

Niveau de l'eau statique original 5.2m (17 ft) — Original static water level

Elévation du haut du tubage 9.90m (32.49 ft) — Elevation of casing top

Origine du puits Drilled for Dept. of Environment — Origin of well

Foré pour le ministère de l'Environnement



LEGEND-LÉGENDE
Water level traces
Graphiques des niveaux de l'eau

Record monthly maximum
Maximum record mensuel

Record monthly minimum
Minimum record mensuel

Monthly average
Moyen mensuel

Trace positions are approximate between flexure points
Positions des tracés sont approximatives entre les points d'inflexion

Comments:
Commentaires:

Short period of record; affected by nearby pumping well.

Courte période de dossier; influencé par les puits de pompage à proximité.

1:250,000

Well name Nom du puits	Recorder Type de l' Enrégistreur	Date of/de l' Instrumentation	Date of/du Termination Terminaison	Current Status Présent	Data recovery Reprise des données, %
Bouctouche North well site. (BS-2)	A-71 met.	1983-06		Active; water-management Actif; gestion des eaux	69%

Lithologie des unités	m	ft (pi)	Lithology of units
Dépôts meubles			Overburden
Grès	10	40	Sandstone
Schiste argileux	20	80	Shale
	30	120	
Grès	40		Sandstone
Schiste argileux			Shale
Grès	50	160	Sandstone
Schiste argileux			Shale
Grès	60	200	Sandstone
Schiste argileux			Shale
Grès	70	240	Sandstone
Schiste argileux	80		Shale
	90	280	
	100	320	
Grès	110	360	Sandstone
	120	400	
	130	440	
	140	480	
	150	500	

Puits d'observation Bouctouche North Well Site (BS-2) — Observation well

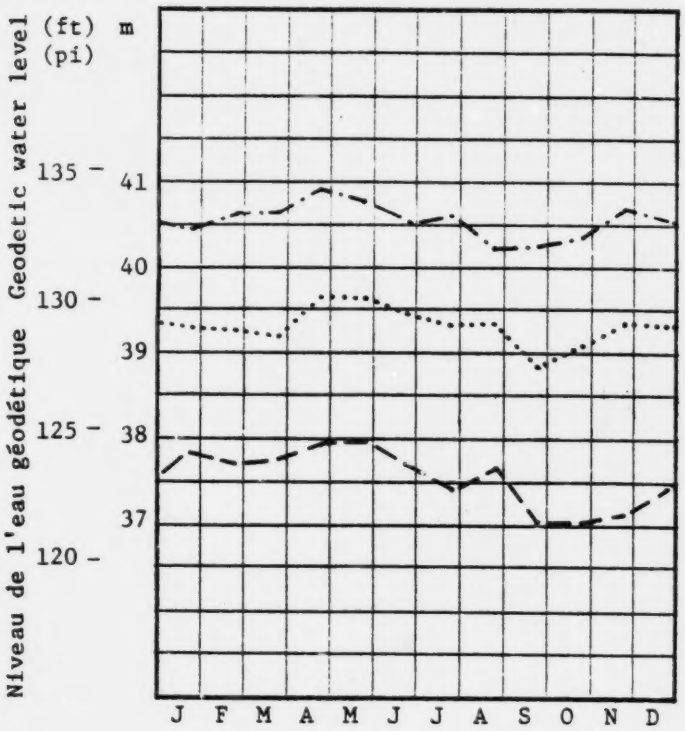
Date du forage 1981 — Date drilled

Niveau de l'eau statique original _____ — Original static water level

Elévation du haut du tubage 20.33m (66.69 ft) — Elevation of casing top

Origine du puits Mitel water supply exploration TW8 — Origin of well

Exploration pour approvisionnement en eau pour Mitel TW8



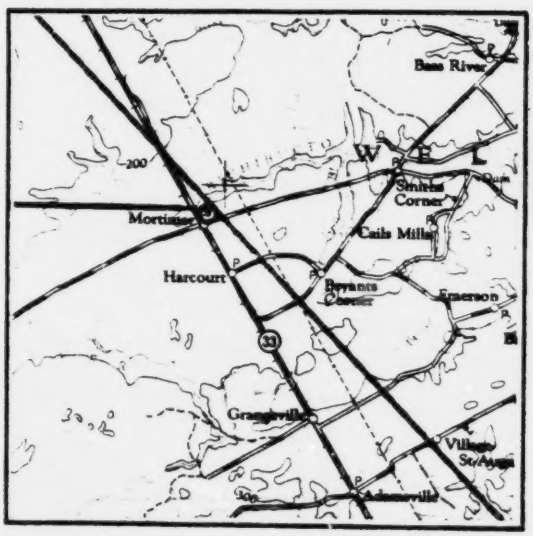
LEGEND-LÉGENDE
Water-level traces
Graphiques des niveaux de l'eau

Record monthly maximum
Maximum record mensuel

Record monthly minimum
Minimum record mensuel

Monthly average
Moyen mensuel

Trace positions are approximate between flexure points
Positions des tracés sont approximatives entre les points d'inflexion



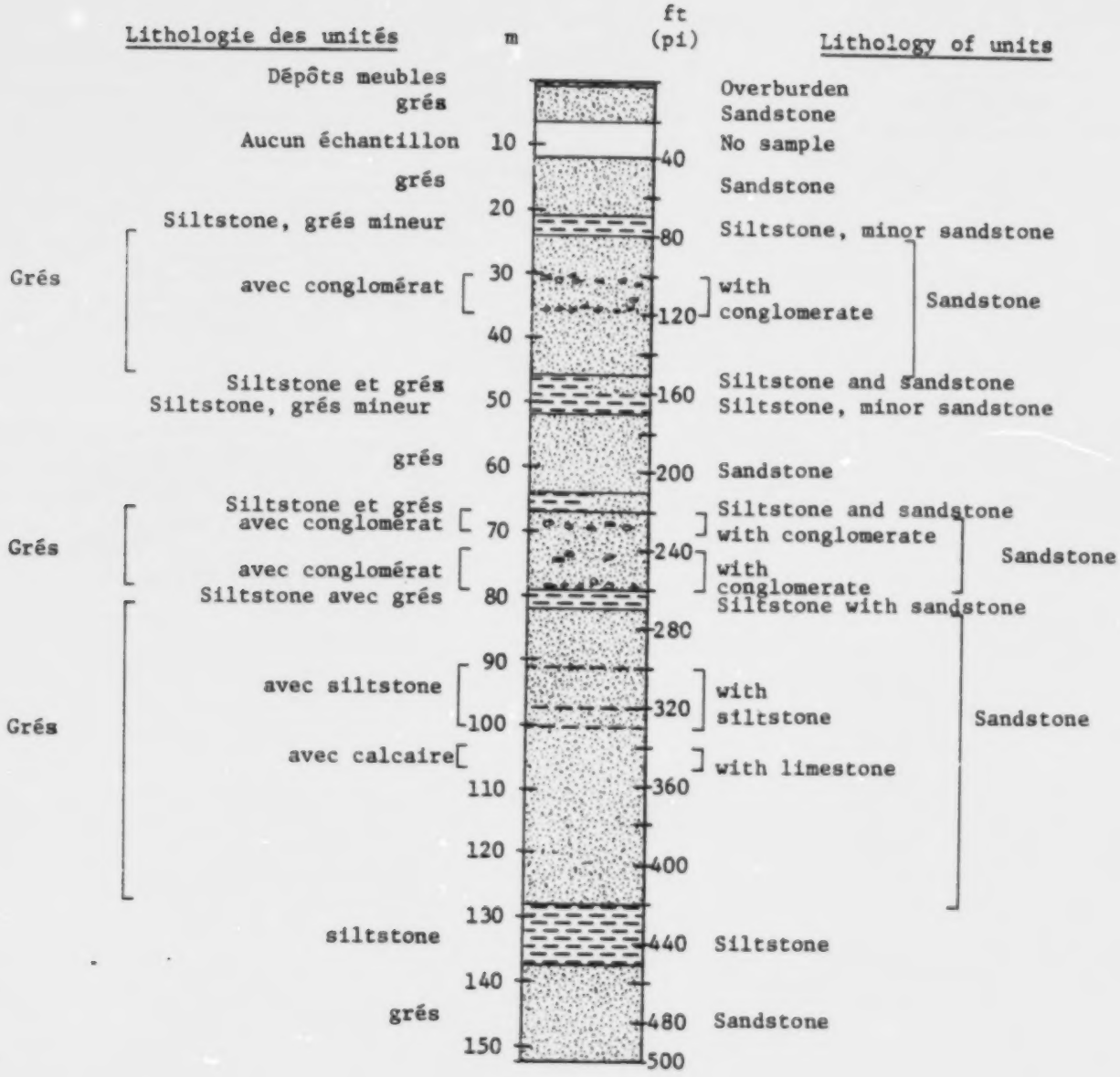
1:250,000

Comments:
Commentaires:

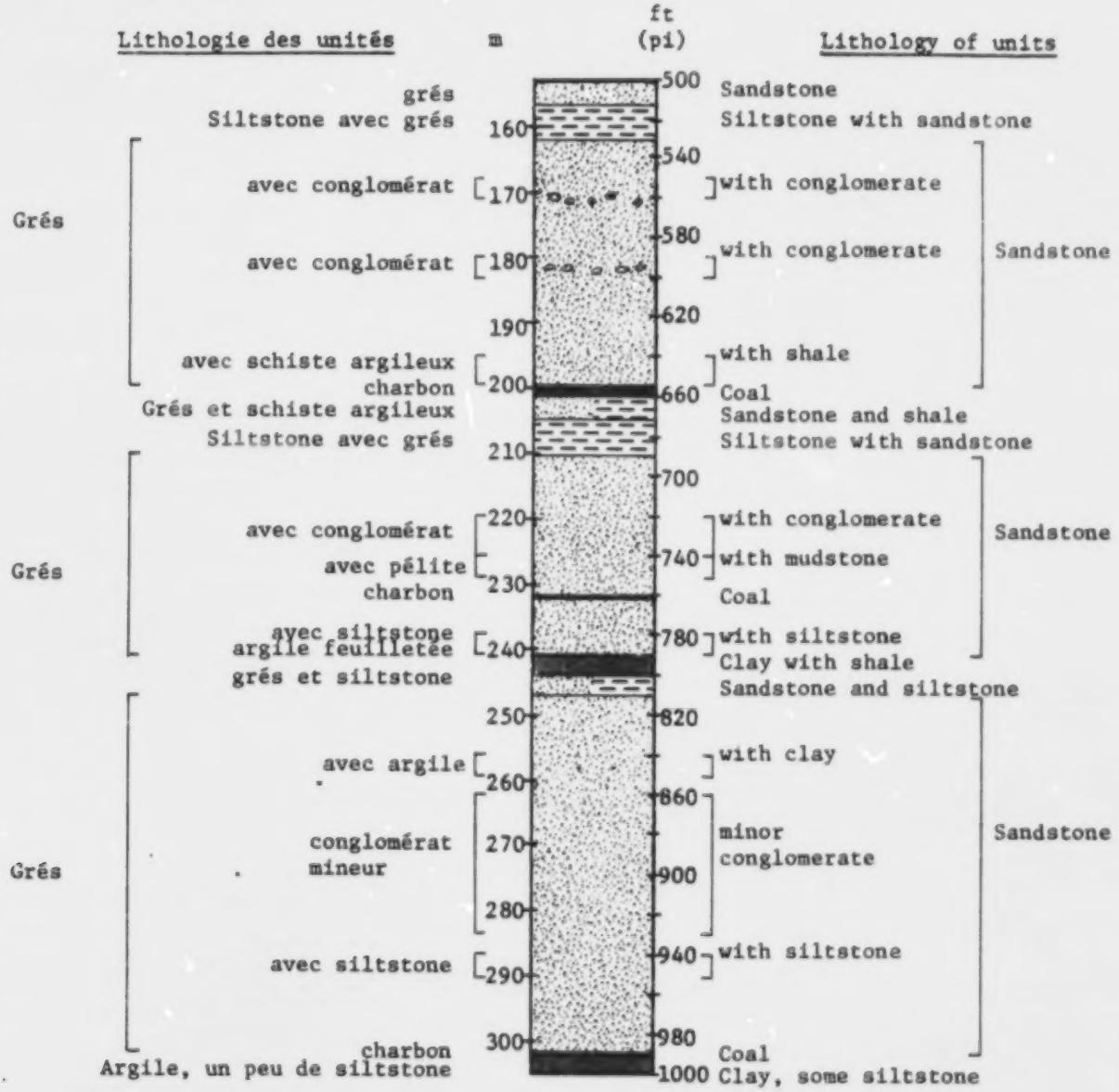
New record minima established in every month of both 1982 and 1983, indicates a sustained level decline.

Nouveau record minimal établit à chaque mois pendant 1982 et 1983 indiquant un niveau à la baisse continuelle.

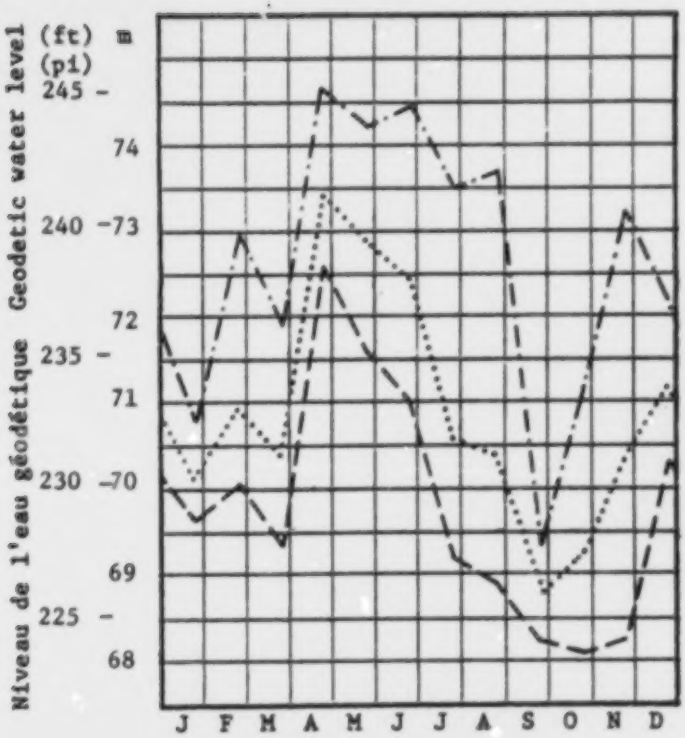
Well name Nom du puits	Recorder Type de l' Enrégistreur	Date of/de l' Instrumentation	Date of/du Termination Terminaison	Current Status Présent	Data recovery Reprise des données, %
Harcourt (BS-3)	Manual Manuel	1979-04		Active Baseline Actif Fondemental	n.a.



Puits d'observation	Harcourt (BS-3)	Observation well
Date du forage	1978-02-25	Date drilled
Niveau de l'eau statique original	10.36m (34 ft)	Original static water level
Elévation du haut du tubage	48.35m (158.63 ft)	Elevation of casing top
Origine du puits	DNR Carboniferous testhole #1139	Origin of well



Puits d'observation _____ Harcourt (BS-3) _____ Observation well



LEGEND-LÉGENDE
Water level traces
Graphiques des niveaux de l'eau

Record monthly maximum
Maximum record mensuel

Record monthly minimum
Minimum record mensuel

Monthly Average
Moyen mensuel

Trace positions are approximate between plotted points (x)
Positions des tracés sont approximatives entre les points donnés (x)

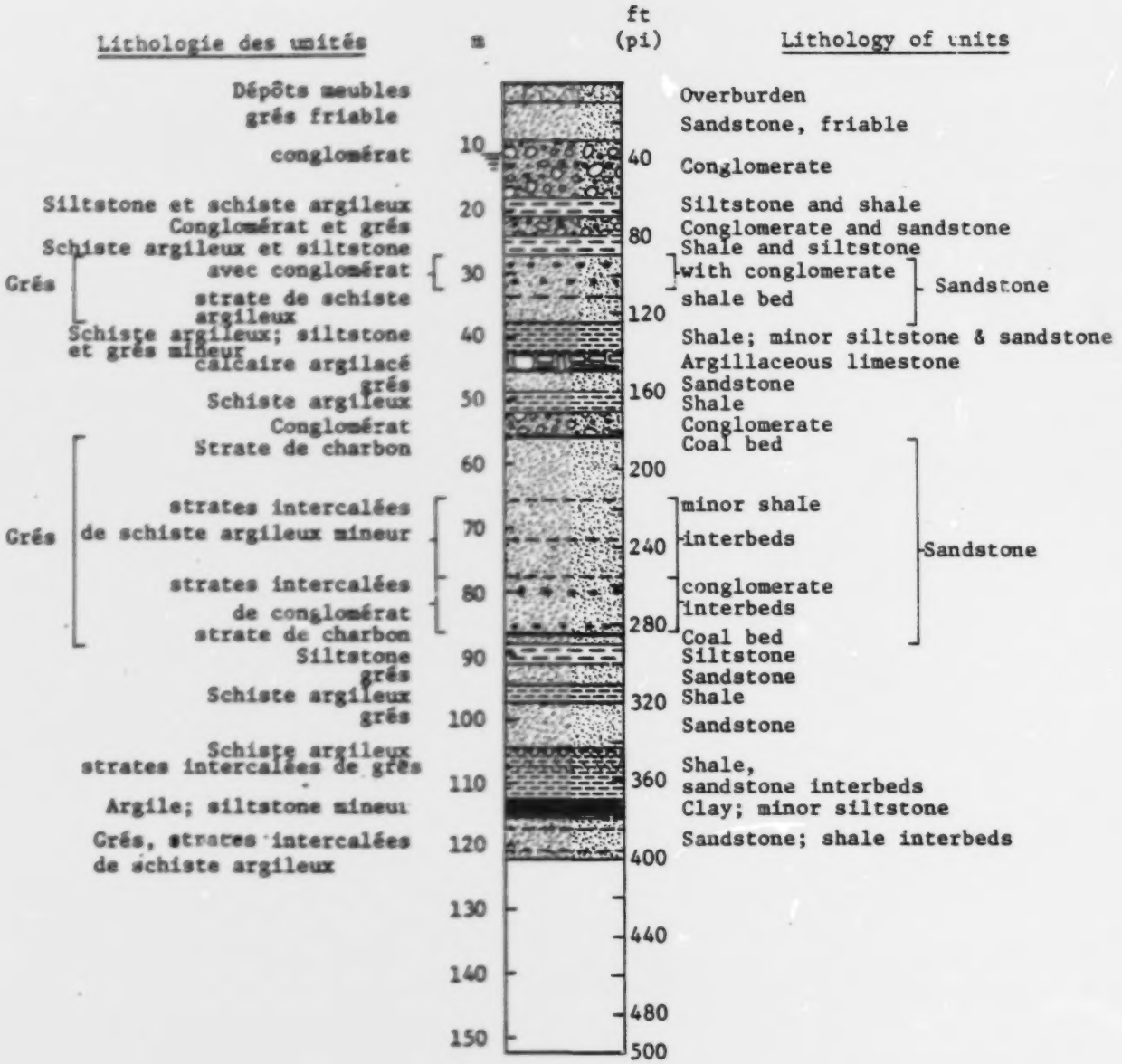
1:250,000

Comments:
Commentaires:

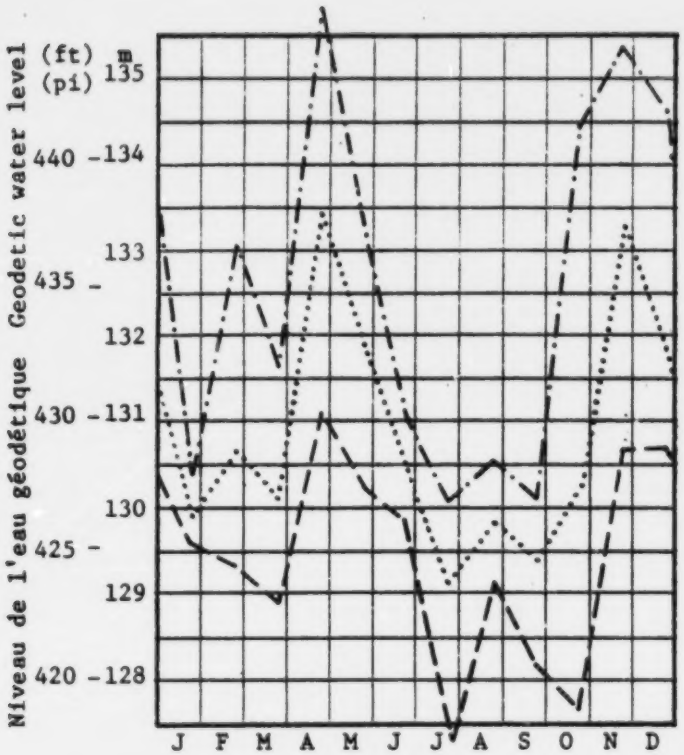
Pronounced snowmelt recharge event April-May; typical two-peak response pattern.

Evénement important d'alimentation de la fonte des neiges en avril-mai; modèle typique de deux sommets.

Well name Nom du puits	Recorder Type de l' Enrégistreur	Date of/de l' Instrumentation	Date of/du Termination Terminaison	Current Status Présent	Data recovery Reprise des données, %
Rogersville (BO-5)	Manual Manuel	1979-04		Active Baseline Actif Fondemental	n.a.



Puits d'observation	Rogersville (BO-5)	Observation well
Date du forage	1977-09-10	Date drilled
Niveau de l'eau statique original	11.3 m (37 ft)	Original static water level
Elévation du haut du tubage	80.96 m (265.61 ft)	Elevation of casing top
Origine du puits	DNR Carboniferous testhole #87	Origin of well



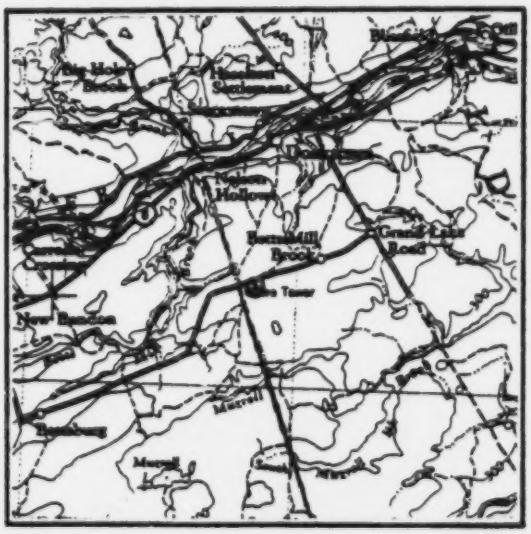
LEGEND-LÉGENDE
Water level traces
Graphiques des niveaux de l'eau

Record monthly maximum
Maximum record mensuel

Record monthly minimum
Minimum record mensuel

Monthly average
Moyen mensuel

Trace positions are approximate between flexure points
Positions des tracés sont approximatives entre les points d'inflexion



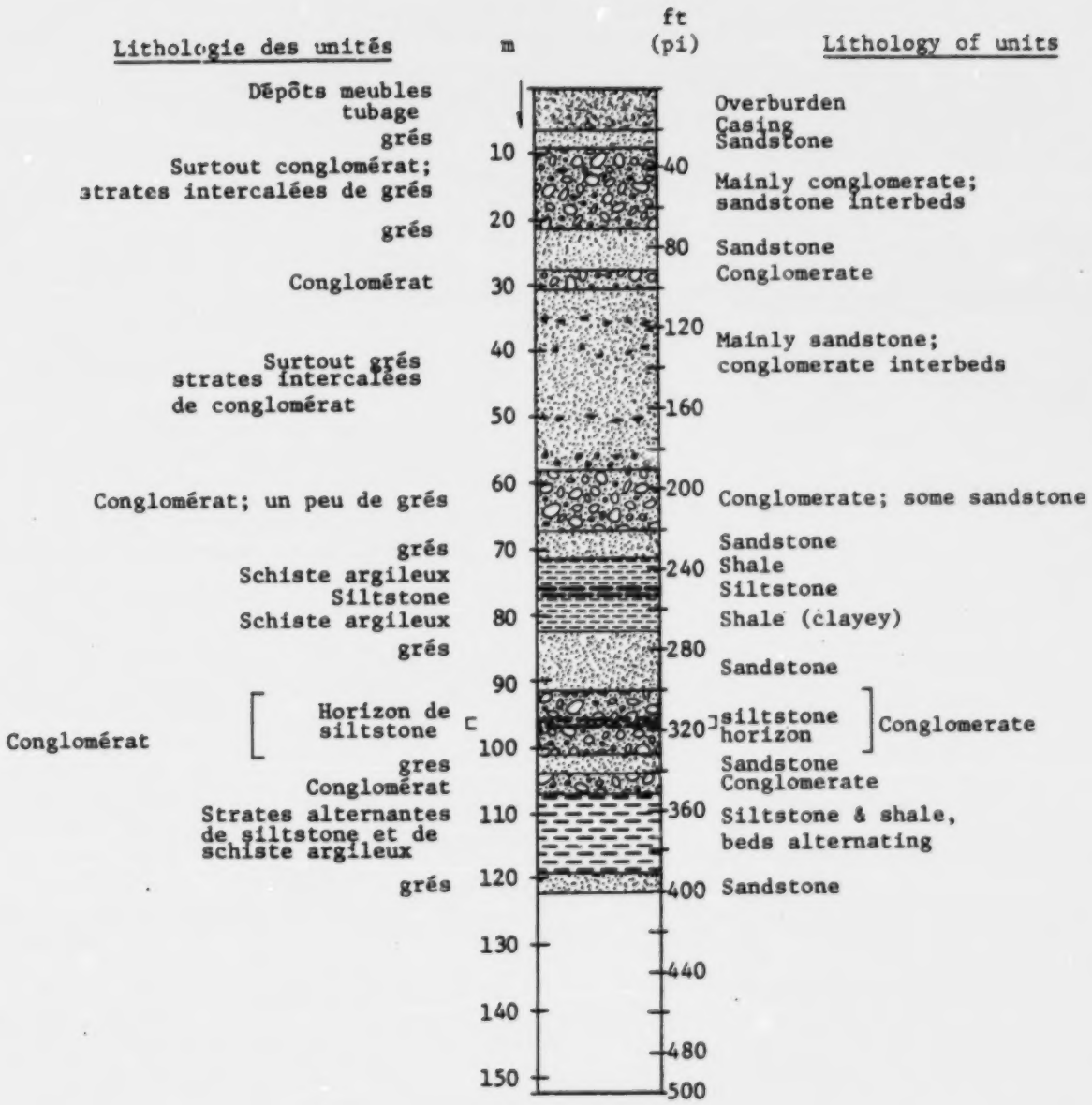
1:250,000

Comments:
Commentaires:

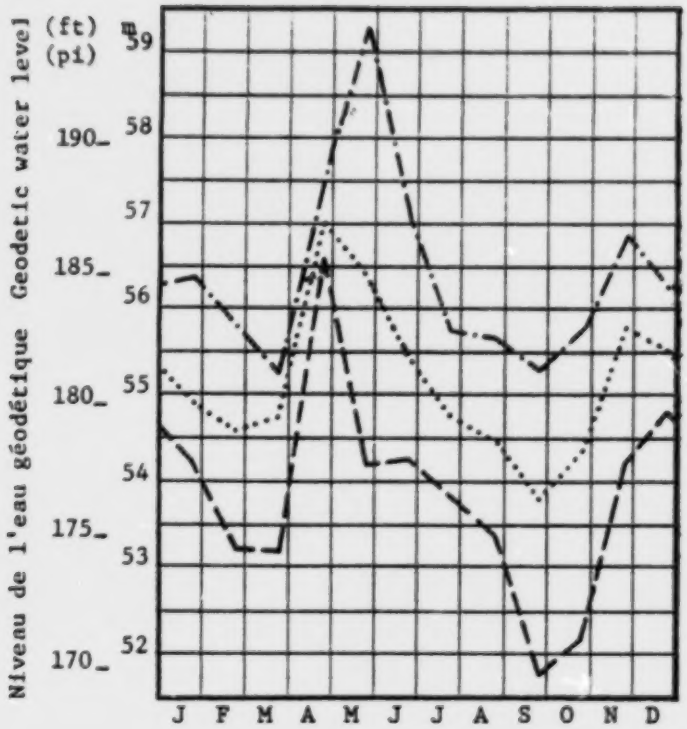
Pronounced snowmelt recharge event April-May; typical two-peak response pattern.

Evénement important d'alimentation de la fonte des nerges en avril-mai; modéle typique de deux sommets

Well name Nom du puits	Recorder Type de l' Enrégistreur	Date of/de l' Instrumentation	Date of/du Termination Terminaison	Current Status Présent	Data recovery Reprise des données, %
Doaktown (BN-1)	Manual Manuel	1979-04		Active Baseline Actif Fondemental	n.a.



Puits d'observation	Doaktown (BN-1)	Observation well
Date du forage	1977-11-17	Date drilled
Niveau de l'eau statique original	11.58m (38 ft)	Original static water level
Elévation du haut du tubage	142.48m (467.46 ft)	Elevation of casing top
Origine du puits	DNR Carboniferous testhole # 131	Origin of well



LEGEND-LÉGENDE
Water level traces
Graphiques des niveaux de l'eau

Record monthly maximum
Maximum record mensuel

Record monthly minimum
Minimum record mensuel

Monthly average
Moyen mensuel

Trace positions are approximate between flexure points
Positions des tracés sont approximatives entre les points d'inflexion

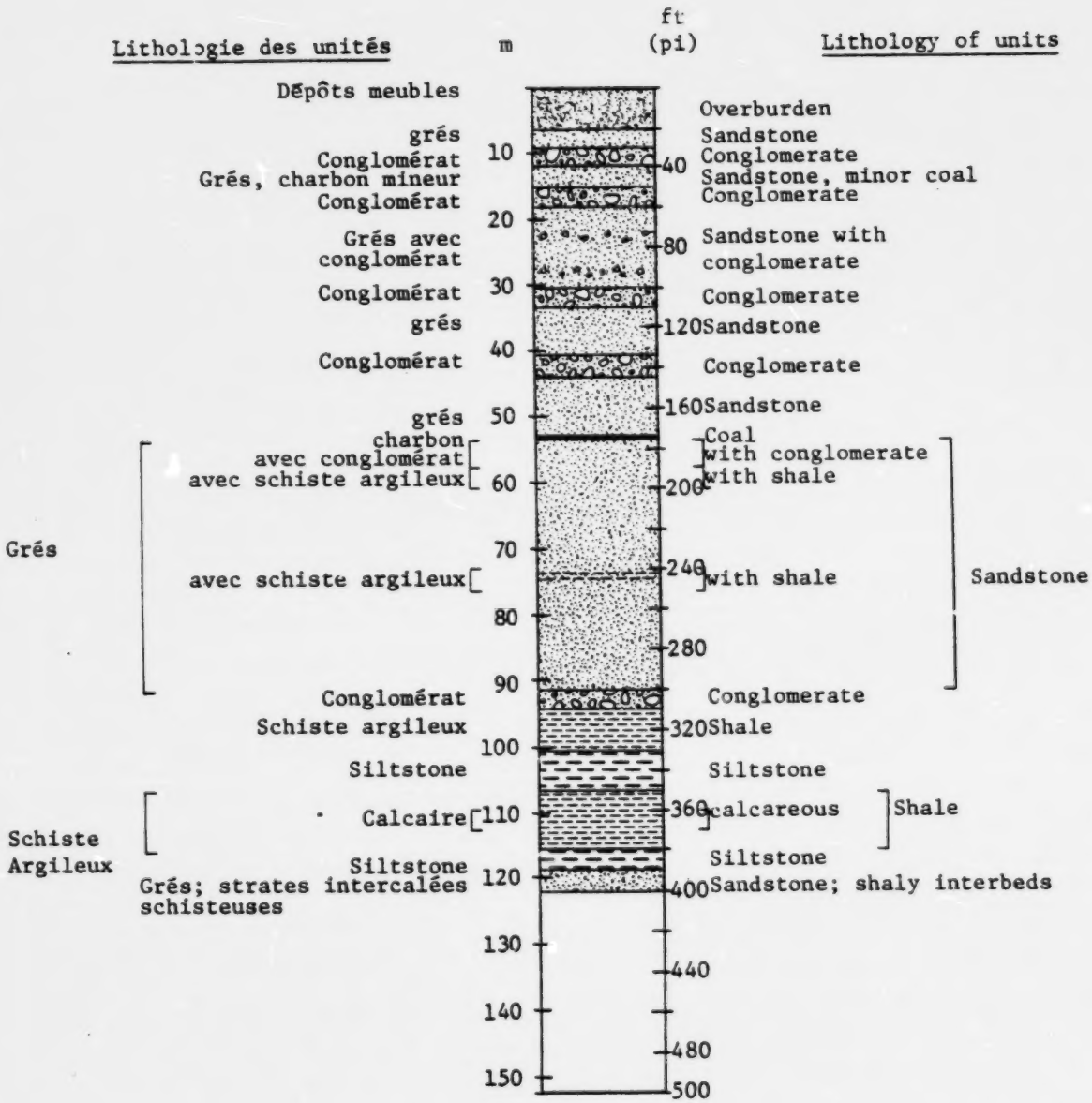
1:250,000

Comments:
Commentaires:

Pronounced snowmelt recharge event April-May; typical two-peak response pattern.

Evénement important d'alimentation de la fonte des neiges en avril-mai; modèle typique de deux sommets.

Well name Nom du puits	Recorder Type de l' Enrégistreur	Date of/de l' Instrumentation	Date of/du Termination Terminaison	Current Status Présent	Data recovery Reprise des données, %
Blackville D.O.T. M.D.T. (BO-7)	Manual Manuel	1979-05		Active Baseline Actif Fondemental	n.a.



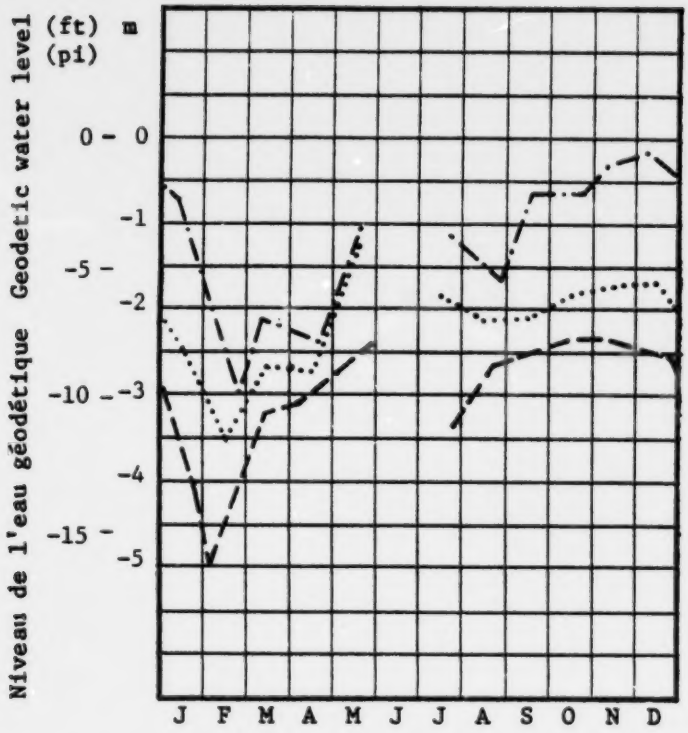
Puits d'observation Blackville D.O.T. M.D.T. (BO-7) Observation well

Date du forage 1979-10-9 Date drilled

Niveau de l'eau statique original 7.92 m (26 ft) Original static water level

Elévation du haut du tubage 60.82 m (199.54ft) Elevation of casing top

Origine du puits DNR Carboniferous test hole #102 Origin of well



LEGEND-LÉGENDE
Water level traces
Graphiques des niveaux de l'eau

Record monthly maximum
Maximum record mensuel

Record monthly minimum
Minimum record mensuel

Monthly average
Moyen mensuel

Trace positions are approximate between flexure points
Positions des tracés sont approximatives entre les points d'inflexion

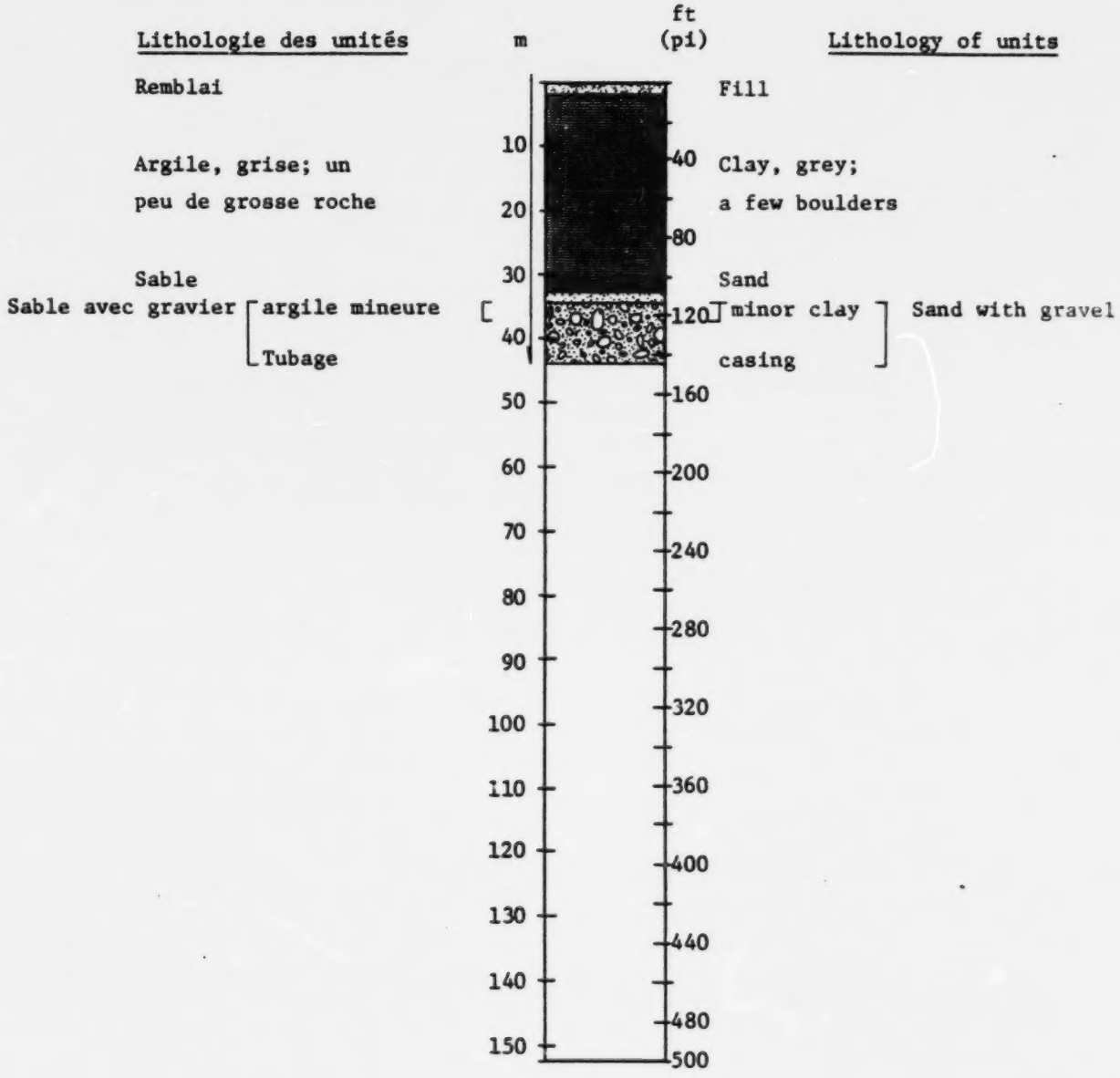
1:250,000

Comments:
Commentaires:

Level fluctuates widely with pumping of downtown wells, resulting in poor record. Experiment with re-gearing.

Le niveau varie beaucoup avec le pompage des puits de la ville, ce qui donne des résultats de pauvre qualité. Essai avec différent engrenage.

Well name Nom du puits	Recorder Type de l' Enrégistreur	Date of/de l' Instrumentation	Date of/du Termination Terminaison	Current Status Présent	Data recovery Reprise des données, %
Newcastle Dalton Ave. (BO-6)	A-35 Imp.	1982-06		Active; water-management Actif; gestion des eaux	98% since/depuis Sept. 1983



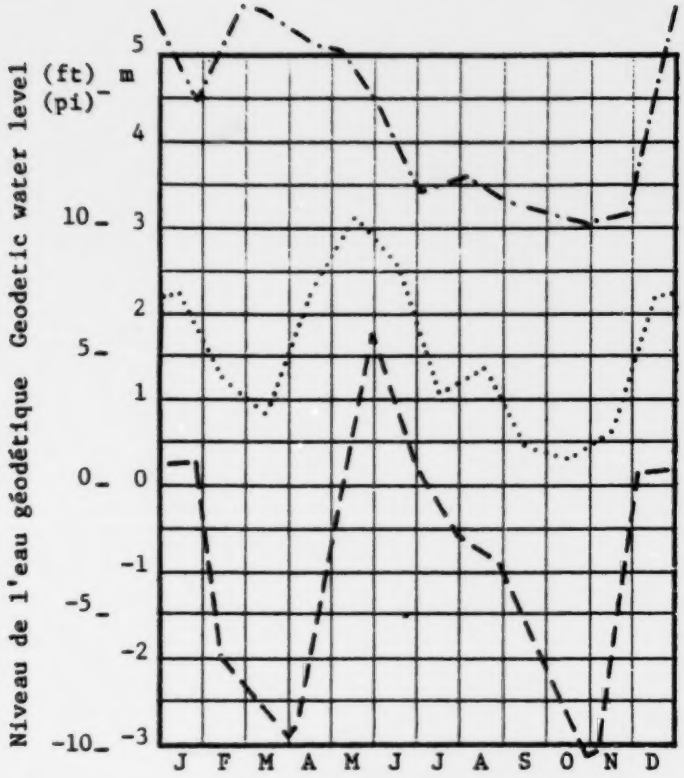
Puits d'observation Newcastle Dalton Avenue (BO-6) Observation well

Date du forage 1977-01 Date drilled

Niveau de l'eau statique original 16.12m (52.88 ft) Original static water level

Elévation du haut du tubage 14.83m (48.65 ft) Elevation of casing top

Origine du puits Water supply expl., Site 3 Origin of well
Exploration pour approvisionnement en eau, site 3



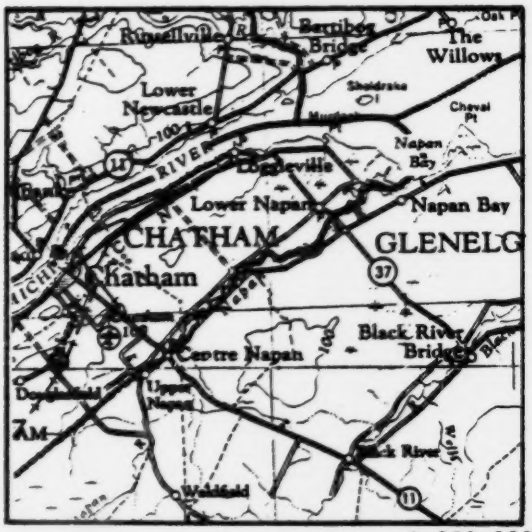
LEGEND-LÉGENDE
Water level traces
Graphiques des niveaux de l'eau

Record monthly maximum
Maximum record mensuel

Record monthly minimum
Minimum record mensuel

Monthly average
Moyen mensuel

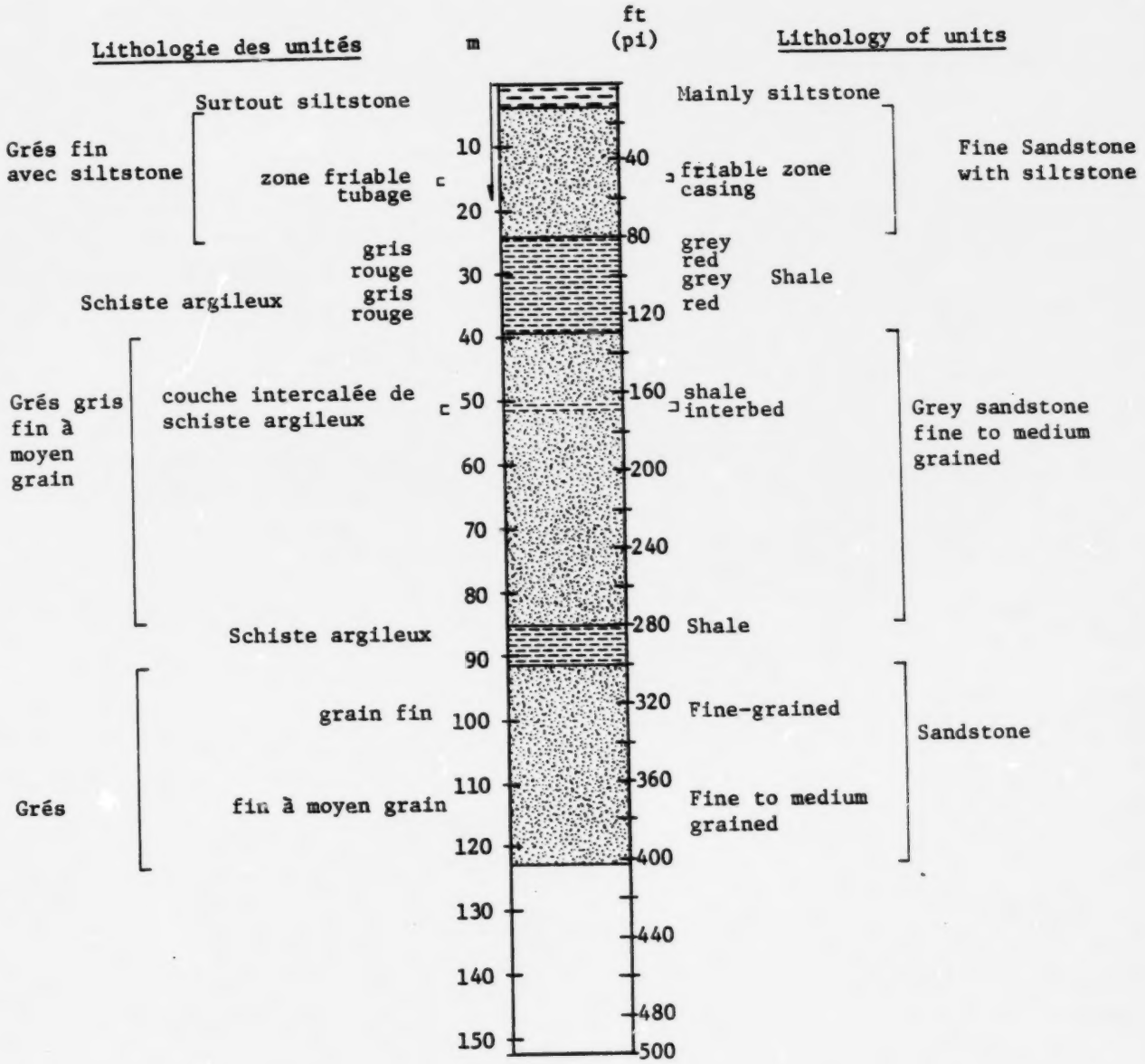
Trace positions are approximate between flexure points
Positions des tracés sont approximatives entre les points d'inflexion



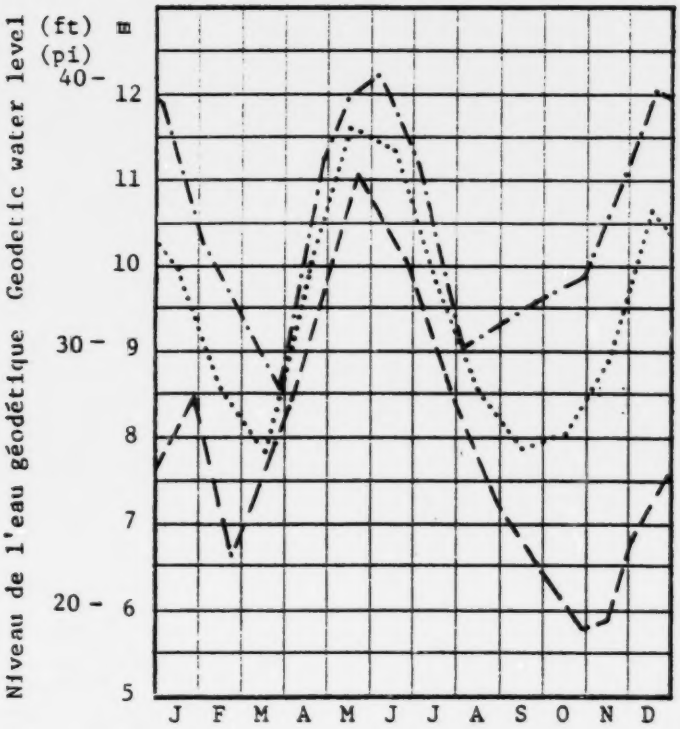
1:250,000

Comments:
Commentaires:
Snowmelt recharge event April - May; basically a typical 2-peak pattern. Wide range indicates position in a recharge area.
Evénement d'alimentation en avril - mai; un modéle typique de deux sommets. La grande variation démontre la position dans la superficie d'alimentation.

Well name Nom du puits	Recorder Type de l' Enrégistreur	Date of/de l' Instrumentation	Date of/du Termination Terminaison	Current Status Présent	Data recovery Reprise des données, %
Chatham C.F.B. Fed. (BO-1)	A-35 Met.	1978-07		Active; Water management Actif; gestion des eaux.	90%



Puits d'observation	CFB Chatham (Fed.) (BO-1)	Observation well
Date du forage	1978-03-31	Date drilled
Niveau de l'eau statique original	22.4m (73.44 ft)	Original static water level
Elévation du haut du tubage	20.725m (67.99 ft)	Elevation of casing top
Origine du puits	Foré pour/drilled for NBDOE	Origin of well



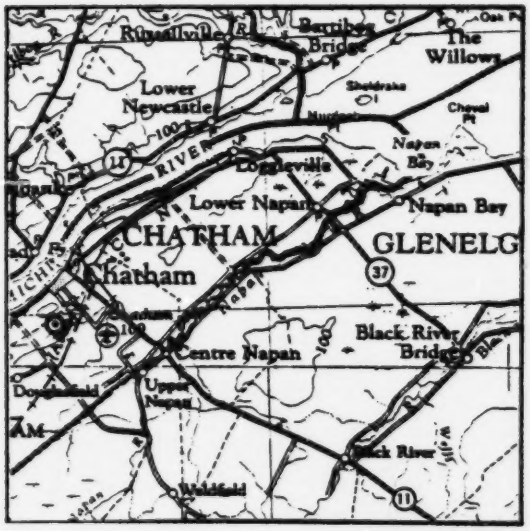
LEGEND-LÉGENDE
Water level traces
Graphiques des niveaux de l'eau

Record monthly maximum
Maximum record mensuel

Record monthly minimum
Minimum record mensuel

Monthly average
Moyen mensuel

Trace positions are approximate between flexure points
Positions des tracés sont approximatives entre les points d'inflexion



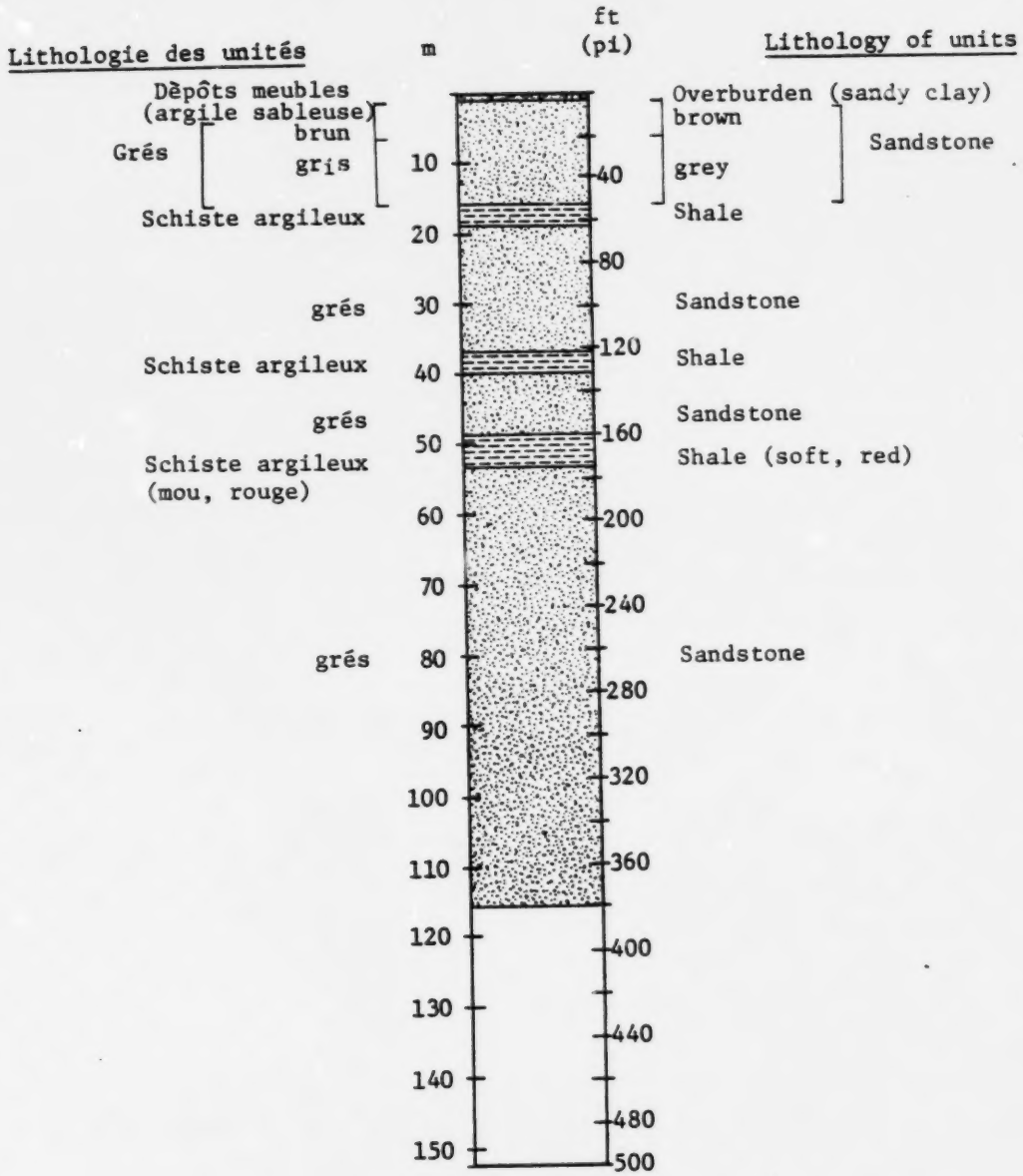
1:250,000

Comments:
Commentaires:

Snowmelt recharge event Apr-May; typical 2 peak pattern. Wide range of fluctuation indicates position in recharge area.

Evénement d'alimentation de la fonte des neiges en avril-mai; modèle typique de deux sommets. Grande variation du niveau indique la position dans la superficie d'alimentation.

Well name Nom du puits	Recorder Type de l' Enrégistreur	Date of/de l' Instrumentation	Date of/du Termination Terminaison	Current Status Présent	Data recovery Reprise des données, %
Chatham Retarded Childrens Property (BO-2)	A-71 Imp.	1981-07		Active; Water Management Actif gestion des eaux	93.5%



(BO-2)

Puits d'observation Chatham Retarded Children's Prop. Observation well

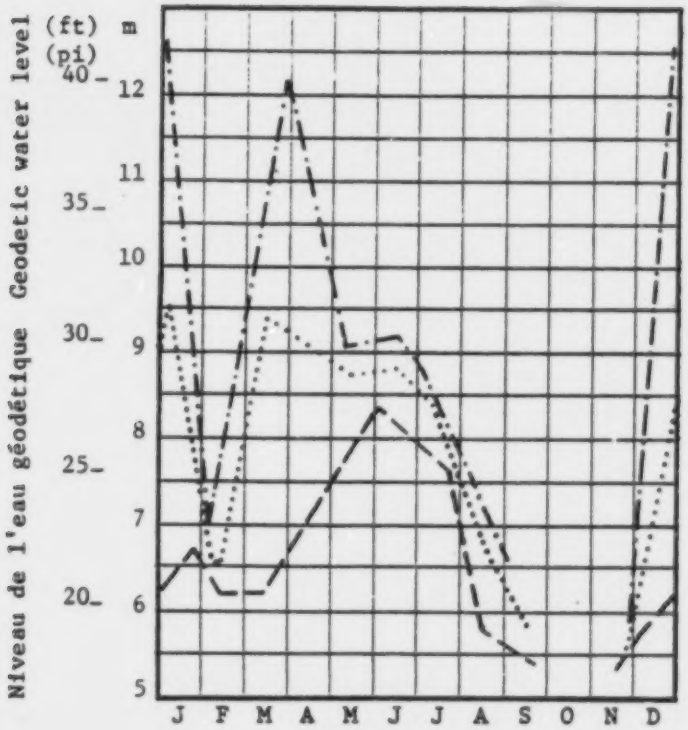
Date du forage 1975-07 Date drilled

Niveau de l'eau statique original _____ Original static water level

Elévation du haut du tubage 26.76m (87.77 ft) Elevation of casing top

Origine du puits Chatham Supply Testwell, TW2-75 Origin of well

Puits d'essai TW2-75 approvisionnement pour Chatham



LEGEND-LÉGENDE
Water level traces
Graphiques des niveaux de l'eau

Record monthly maximum
Maximum record mensuel

Record monthly minimum
Minimum record mensuel

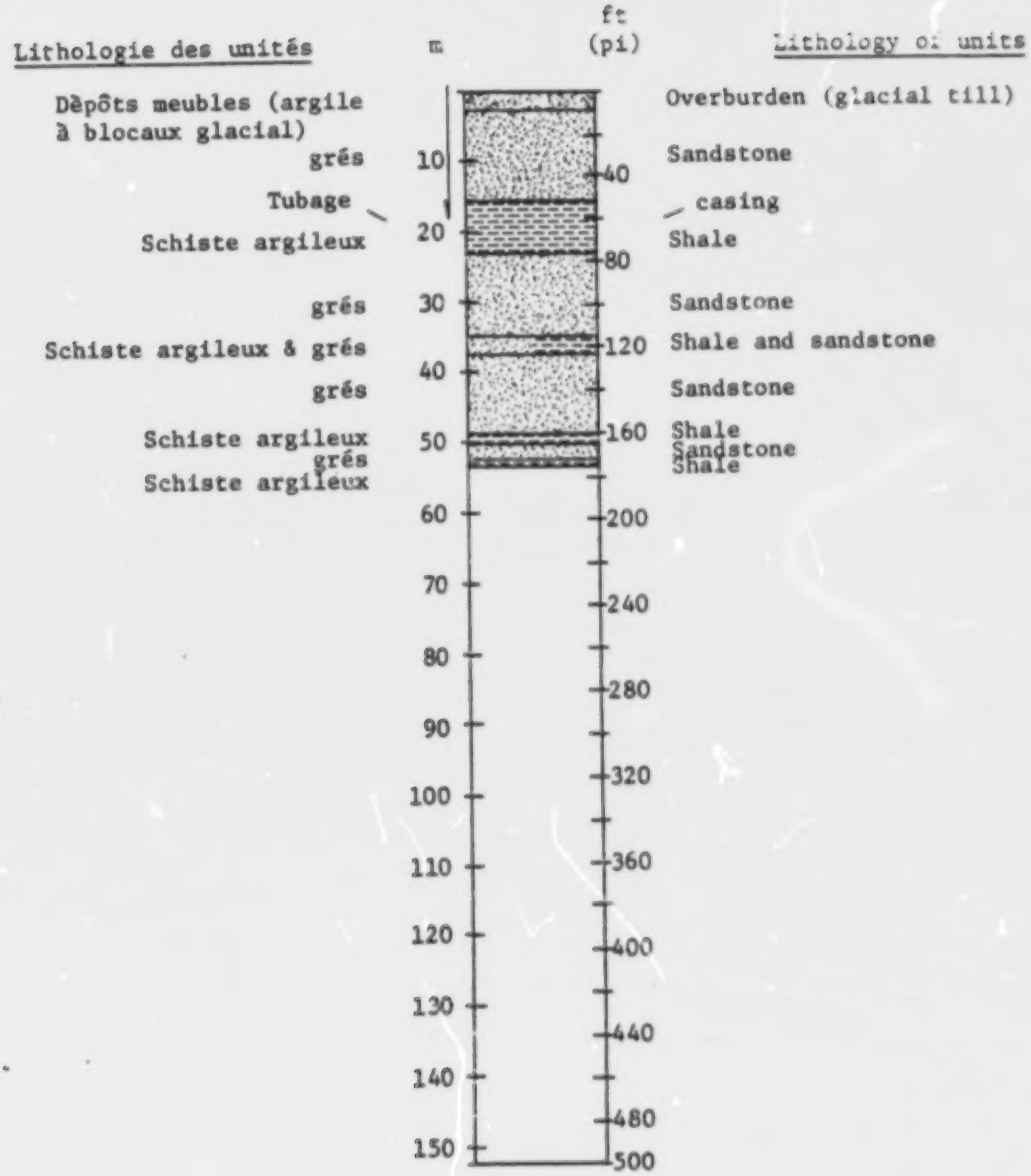
Monthly average
Moyen mensuel

Trace positions are approximate between flexure points
Positions des tracés sont approximatives entre les points d'inflexion

1:250,000

Comments:
Commentaires: Spring recharge begins in March. Further analysis impossible because of short period of record. Influenced by nearby pumping wells.
Evénement d'alimentation du printemps commence en mars. Une étude plus détaillée n'est pas possible à cause de la courte période de dossier. Influencé par les puits de pompage à proximité.

Well name Nom du puits	Recorder Type de l' Enrégistreur	Date of/de l' Instrumentation	Date of/du Termination Terminaison	Current Status Présent	Data recovery Reprise des données, %
Chatham Rue King Street (BO-3)	A-71 Imp.	1983-09		Active; water management Actif; gestion des eaux.	83%



Puits d'observation Chatham King Street (BO-3) — Observation well

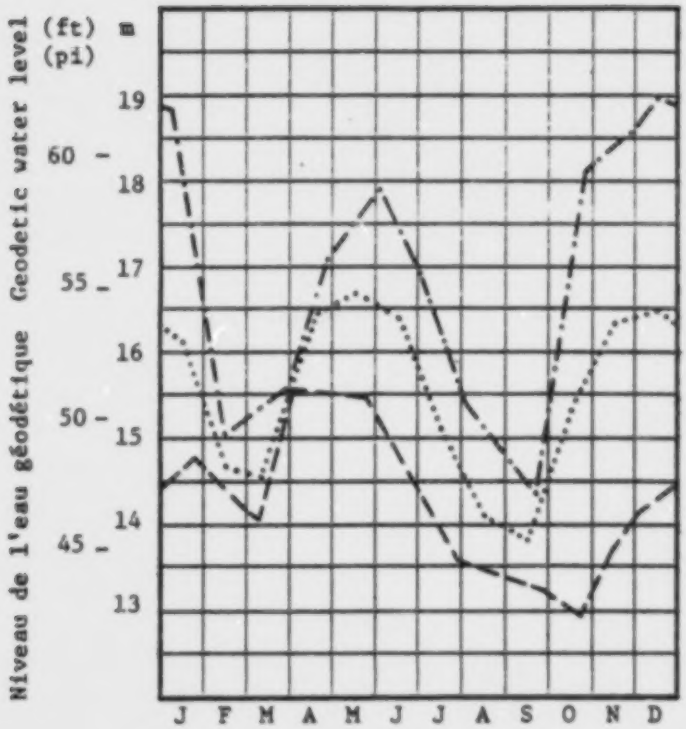
Date du forage 1973-10-26 — Date drilled

Niveau de l'eau statique original 12.9 m (42.2 ft) — Original static water level

Elévation du haut du tubage 27.51 m (90.26 ft) — Elevation of casing top

Origine du puits Water supply exploration — Origin of well

Exploration pour approvisionnement en eau



LEGEND-LÉGENDE
Water level traces
Graphiques des niveaux de l'eau

Record monthly maximum
Maximum record mensuel

Record monthly minimum
Minimum record mensuel

Monthly average
Moyen mensuel

Trace positions are approximate between flexure points
Positions des tracés sont approximatives entre les points d'inflexion

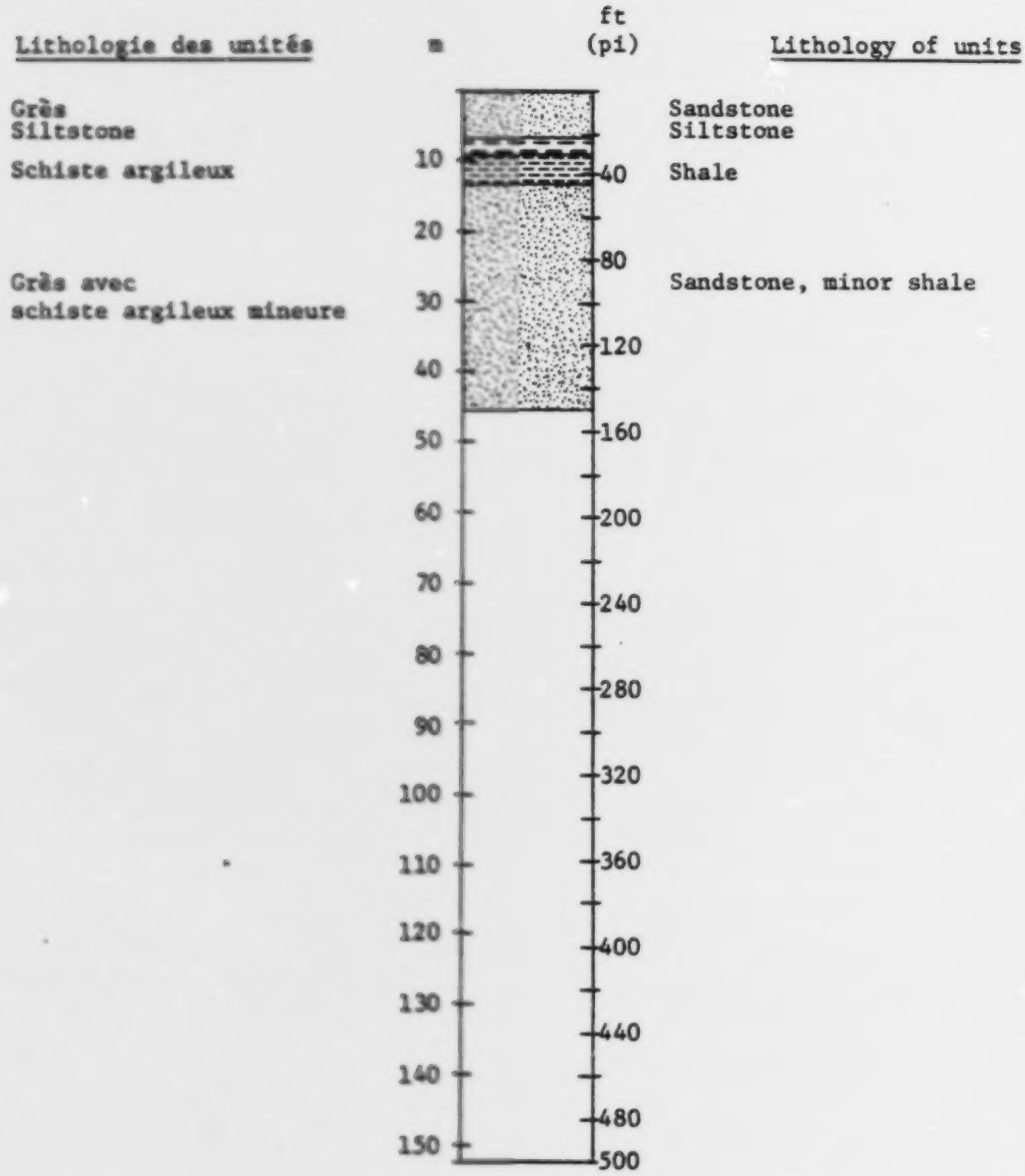
1:250,000

Comments:
Commentaires:

Snowmelt recharge event Apr-May; typical 2 peak pattern. Wide level range indicates recharge area, may also reflect influence of nearby pumping well.

Evénement d'alimentation de la fonte des neiges en avril-mai; modèle typique d'alimentation de deux sommets. Grande variation du niveau indique la superficie d'alimentation, peut aussi indiquer l'influence des puits de pompage à proximité.

Well name Nom du puits	Recorder Type de l' Enrégistreur	Date of/de l' Instrumentation	Date of/du Termination Terminaison	Current Status Présent	Data recovery Reprise des données, %
Chatham Industrial Park (BO-4)	A-71 Imp.	1981-10		Active water-management Actif; gestion des eaux	82.1%



Puits d'observation Chatham Industrial Park (BO-4) Observation well

Date du forage 1973-10-10 Date drilled

Niveau de l'eau statique original 13.32m (43.7ft) Original static water level

Elévation du haut du tubage 29.68m (97.38ft) Elevation of casing top

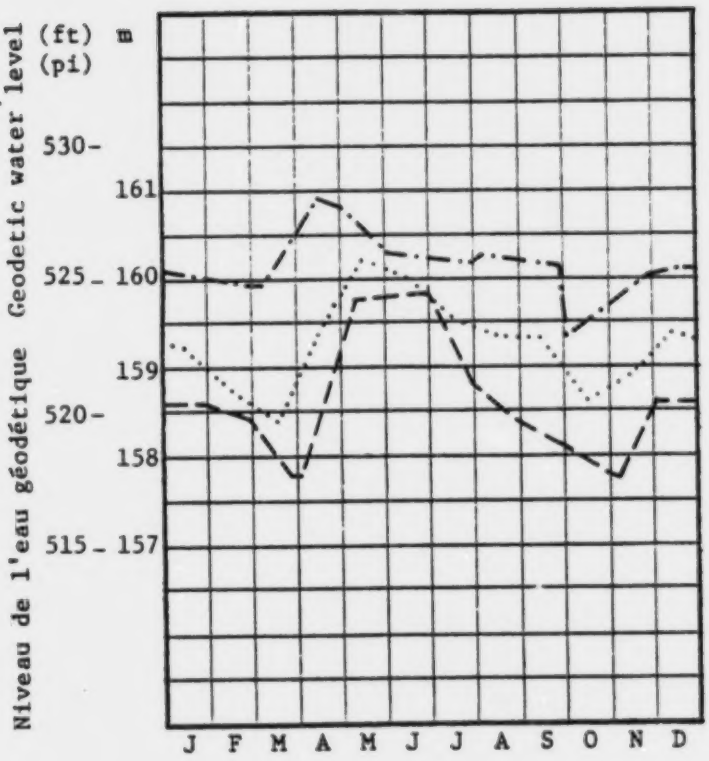
Origine du puits "Vandenberg 300' South" test well origin of well

Puits d'essai "Vandenberg 300' sud"

REGION 3

NORTHEASTERN CARBONIFEROUS BASIN

BASSIN CARBONIFERE NORD-EST



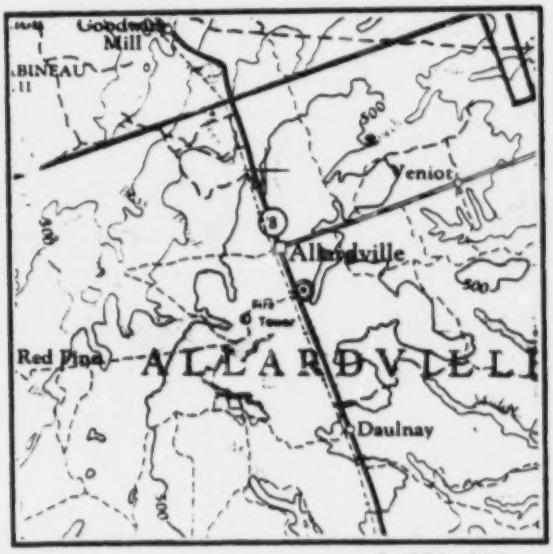
LEGEND-LÉGENDE
Water level traces
Graphiques des niveaux de l'eau

Record monthly maximum
Maximum record mensuel

Record monthly minimum
Minimum record mensuel

Monthly average
Moyen mensuel

Trace positions are approximate between flexure points
Positions des tracés sont approximatives entre les points d'inflexion



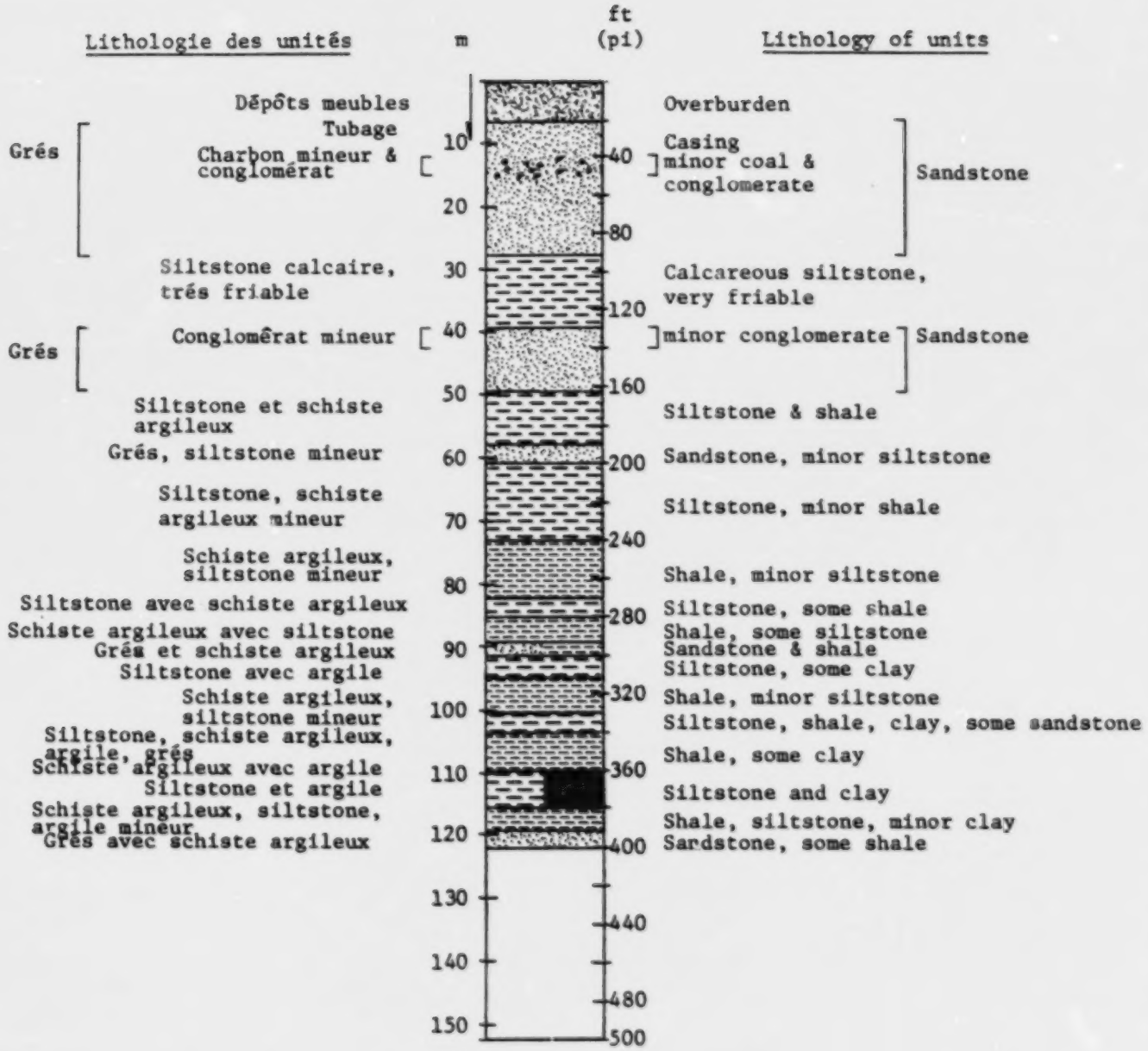
1:250,000

Comments:
Commentaires:

Snowmelt recharge event April-May; typical two-peak pattern.

Evénement d'alimentation de la fonte des neiges en avril-mai; modèle typique de deux sommets.

Well name Nom du puits	Recorder Type de l' Enrégistreur	Date of/de l' Instrumentation	Date of/du Termination Terminaison	Current Status Présent	Data recovery Reprise des données, %
Allardville (BL-1)	A-71 metric metrique	1980-04		Active Baseline Actif Fondemental	58%



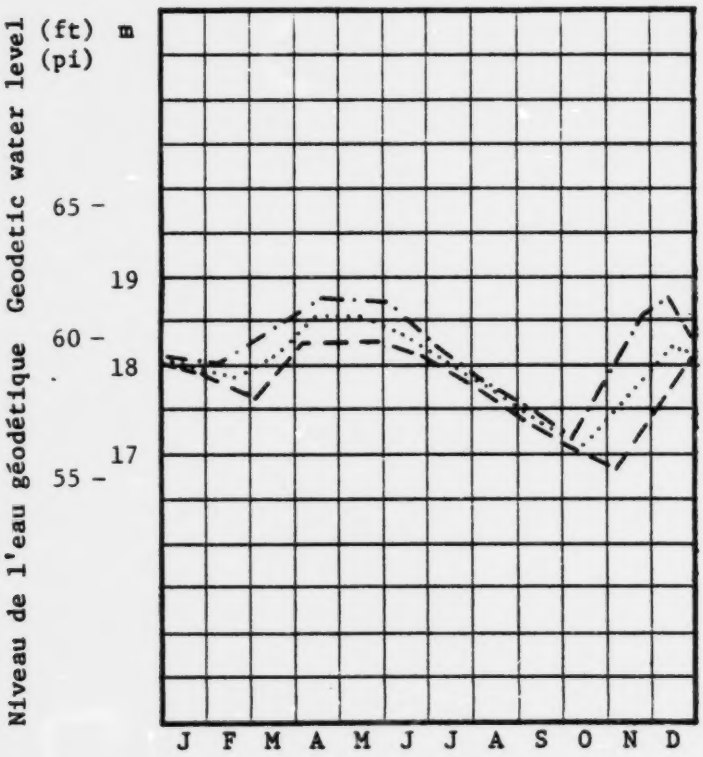
Puits d'observation Allardville (BL-1) — Observation well

Date du forage 1977-03-08 — Date drilled

Niveau de l'eau statique original 12.19 m (40 ft) — Original static water level

Elévation du haut du tubage 171.63m (563.08 ft) — Elevation of casing top

Origine du puits DNR Carboniferous test hole #32 — Origin of well



LEGEND-LÉGENDE
Water level traces
Graphiques des niveaux de l'eau

Record monthly maximum
Maximum record mensuel

Record monthly minimum
Minimum record mensuel

Monthly average
Moyen mensuel

Trace positions are approximate between flexure points
Positions des tracés sont approximatives entre les points d'inflexion

1:250,000

Comments:
Commentaires:

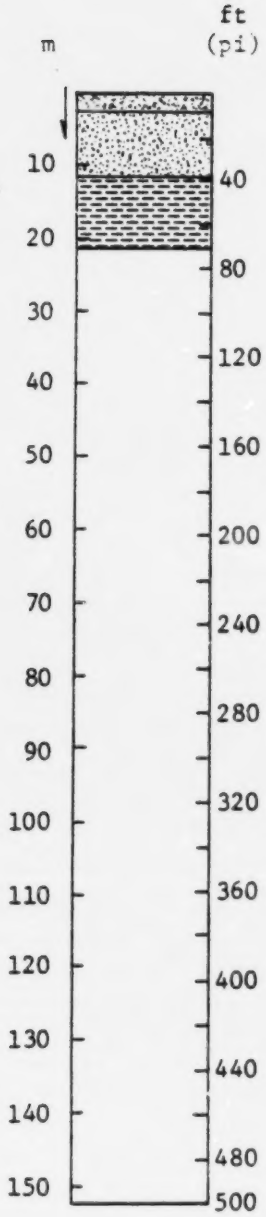
Snowmelt recharge event Mar-April; typical two-peak response pattern with moderate amplitude in near-coastal situation.

Evénement d'alimentation de la fonte des neiges en mars-avril; modèle typique de deux sommets avec amplitude modérée dans une situation côtière.

Well name Nom du puits	Recorder Type de l'Enrégistreur	Date of/de l' Instrumentation	Date of/du Termination Terminaison	Current Status Présent	Data recovery Reprise des données, %
Tracadie Ecole Polyvalente (BL-2)	A-71 Imp.	1982-11		Active Water Management Actif; Gestion des eaux	97%

Lithologie des unités

Dépôts meubles (sable)
Tubage
Grès
Schiste argileux et argile, avec strates intercalées de grès



Lithology of units

Overburden (sand)
Casing
Sandstone
Clayey shale with sandstone interbeds

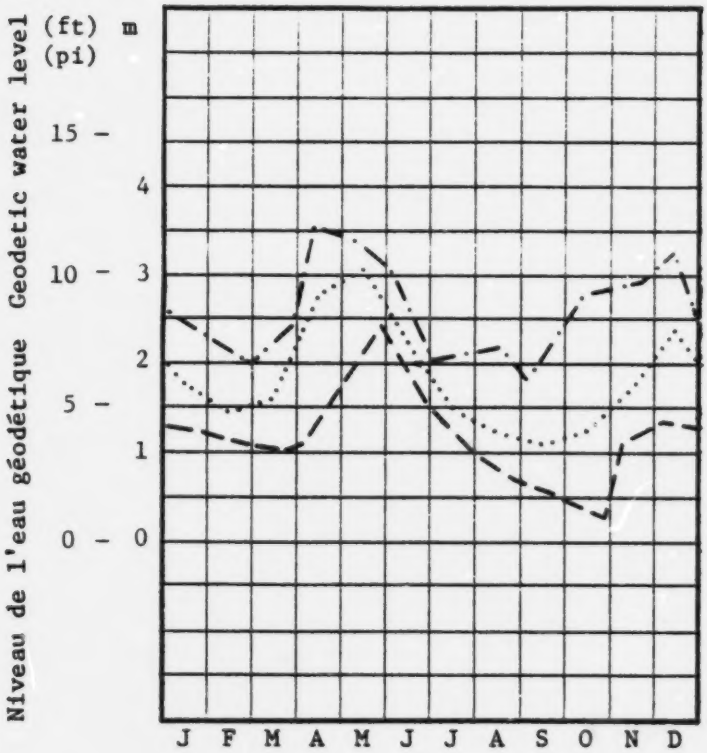
Puits d'observation Tracadie, Ecole Polyvalente (BL-2) Observation well

Date du forage 1982-11-25 Date drilled

Niveau de l'eau statique original _____ Original static water level

Elévation du haut du tubage 20.15m (66.10ft) Elevation of casing top

Origine du puits Drilled for N.B.D.O.E. Origin of well
Foré pour M.E.N.B.



LEGEND-LÉGENDE
Water level traces
Graphiques des niveaux de l'eau

Record monthly maximum
Maximum record mensuel

Record monthly minimum
Minimum record mensuel

Monthly average
Moyen mensuel

Trace positions are approximate between flexure points
Positions des tracés sont approximatives entre les points d'inflexion

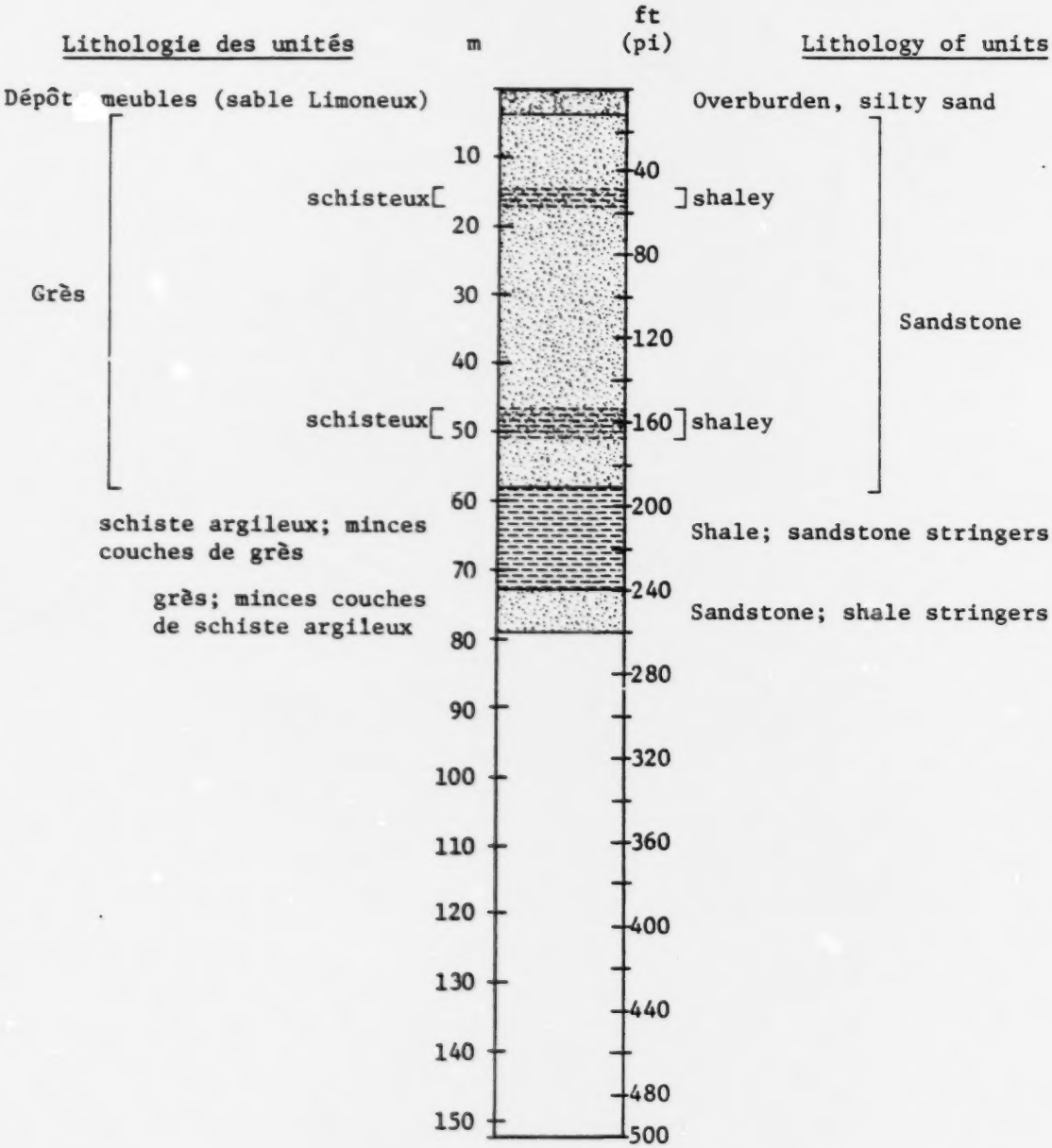
1:250,000

Comments:
Commentaires:

Snowmelt recharge event Mar-May; typical 2 peak pattern. Range of fluctuation may be increased by proximity to pumping well.

Evénement d'alimentation de la fonte des neiges en mars-mai; modèle typique de deux sommets. Les variations sont probablement augmentées à cause de la proximité d'un puits de pompage.

Well name Nom du puits	Recorder Type de l' Enrégistreur	Date of/de l' Instrumentation	Date of/du Termination Terminaison	Current Status Présent	Data recovery Reprise des données, %
Shippagan Reservoir site de réservoir	A-71 Imp. (BL-3)	1980-05		Active; Water Management Actif Gestion des eaux	94%



Puits d'observation Shippagan Reservoir Site (BL-3) Observation well

Date du forage de réservoir Date drilled

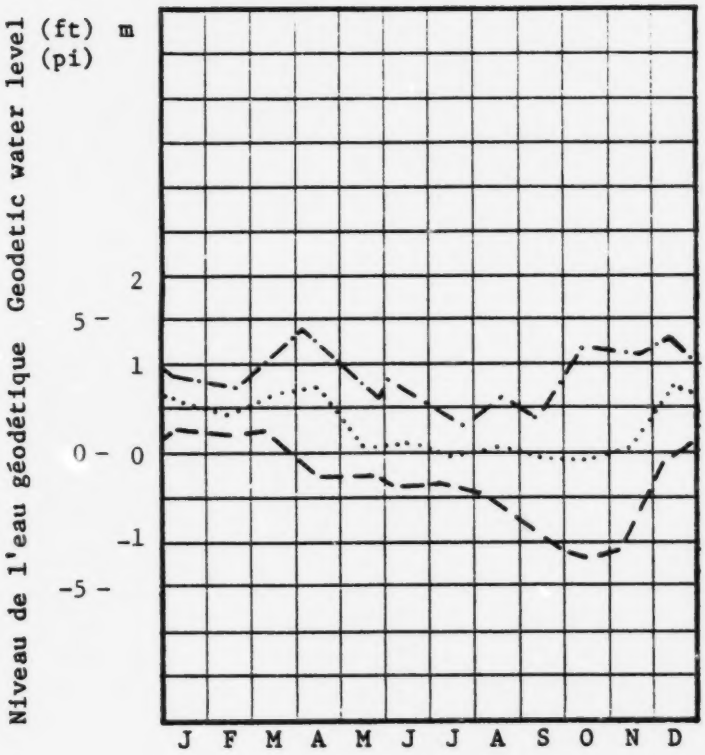
Niveau de l'eau statique original _____ Original static water level

Elévation du haut du tubage 4.86m (15.94 ft) Elevation of casing top

Origine du puits Water supply exploration Origin of well

(strat. from nearby TH5, Water Mgmt Services 1981)

Exploration pour approvisionnement en eau (strat. de TH5 à proximité)



LEGEND-LÉGENDE
Water level traces
Graphiques des niveaux de l'eau

Record monthly maximum
Maximum record mensuel

Record monthly minimum
Minimum record mensuel

Monthly average
Moyen mensuel

Trace positions are approximate between flexure points
Positions des tracés sont approximatives entre les points d'inflexion

1:250,000

Comments: Snowmelt recharge event Mar-Apr; 2 peak pattern. Small level fluctuation results from near sea-level position minimizing summer lows. Operation to discontinue when nearby pumping well is abandoned.

Commentaires: Evénement d'alimentation de la fonte des neiges en mars-avril; modèle de deux sommets. Le peu de variation du niveau résulte de la position proche du niveau de la mer minimisant ainsi les bas de l'été. La station sera terminée quand le puits de pompage à proximité sera abandonné.

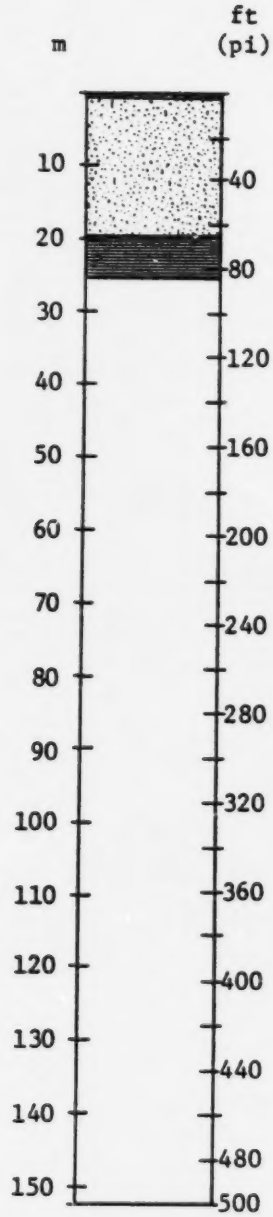
Well name Nom du puits	Recorder Type de l' Enrégistreur	Date of/de l' Instrumentation	Date of/du Termination Terminaison	Current Status Présent	Data recovery Reprise des données, %
Shippagan Rue 15 St. (BL-4)	A-71 Imp.	1980-07		Active Water Management Actif Gestion des eaux	93%

Lithologie des unités

Dèpôts meubles (argile à blocaux sableuse)

Grés

Pélite



Lithology of units

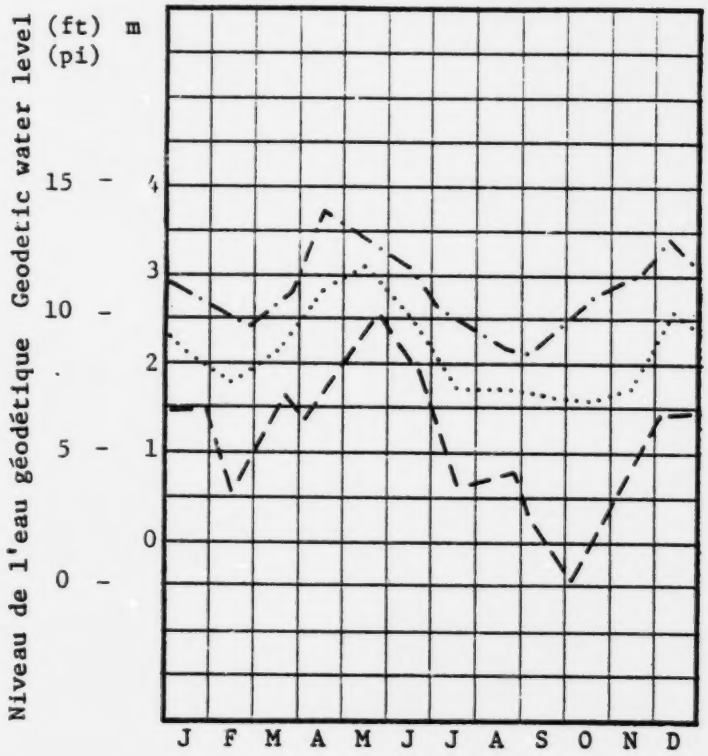
Overburden (sandy till)

Sandstone

Claystone

Puits d'observation	Shippagan Rue 15 Street (BL-4)	Observation well
Date du forage	1968-06	Date drilled
Niveau de l'eau statique original		Original static water level
Elévation du haut du tubage	4.02 m (13.18 ft)	Elevation of casing top
Origine du puits	Water supply expl.bore hole 2 (1968) (Ob. well is adjacent to borehole 2)	Origin of well

Trou de sonde 2 pour exploration en approvisionnement d'eau
(puits d'observation adjacent au trou de sonde)



LEGEND-LÉGENDE
Water level traces
Graphiques des niveaux de l'eau

Record monthly maximum
Maximum record mensuel

Record monthly minimum
Minimum record mensuel

Monthly average
Moyen mensuel

Trace positions are approximate between flexure points
Positions des tracés sont approximatives entre les points d'inflexion

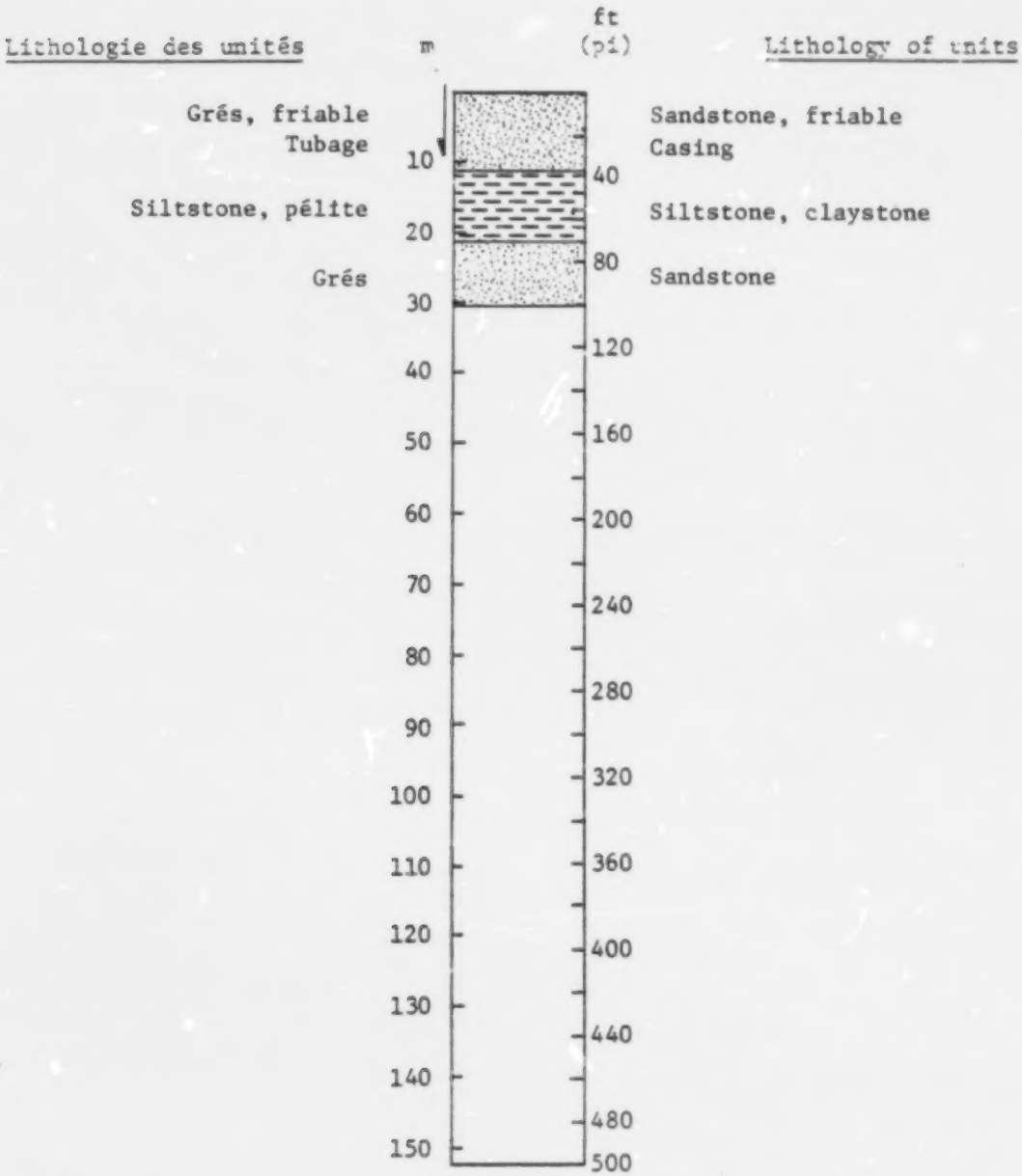
1:250,000

Comments:
Commentaires:

Snowmelt recharge event Mar-May; typical 2 peak response pattern. Located close to numerous private wells.

Evénement d'alimentation de la fonte des neiges en mars-mai; modèle typique de deux sommets. Situé près de nombreux puits domestiques.

Well name Nom du puits	Recorder Type de l' Enrégistreur	Date of/de l' Instrumentation	Date of/du Termination Terminaison	Current Status Présent	Data recovery Reprise des données, %
Lamèque Rue des Pêcheurs (BL-5)	A-71 Imp.	1980-05		Active; Water Management Actif Gestion des eaux	90%



Puits d'observation Laméque, Rue des Pêcheurs (BL-5) Observation well

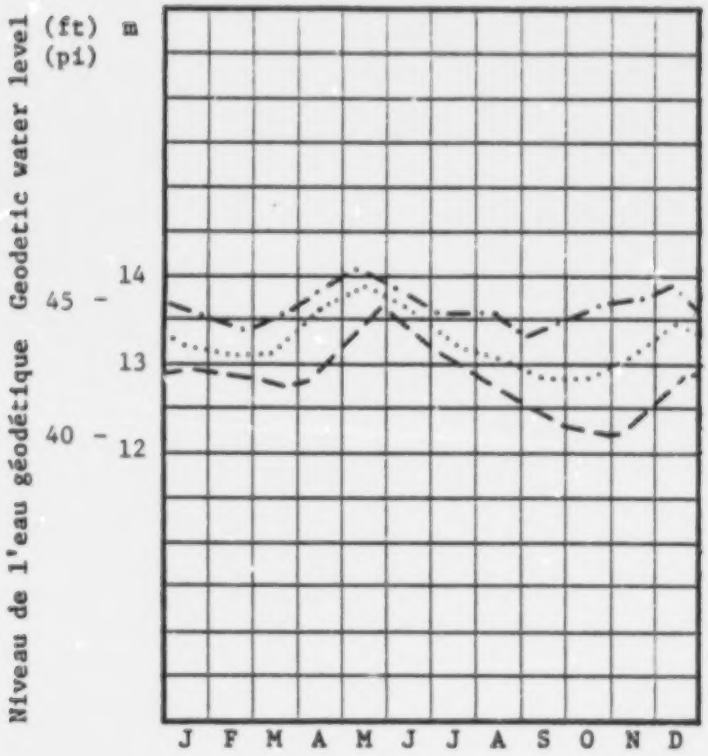
Date du forage _____ Date drilled

Niveau de l'eau statique original _____ Original static water level

Elévation du haut du tubage 9.50m (31.16 ft.) Elevation of casing top

Origine du puits Groundwater Expl. Fenco (1972?) OB-100 Origin of well

Exploration pour eau souterraine (1972?) puits OB-100



LEGEND-LÉGENDE
Water level traces
Graphiques des niveaux de l'eau

Record monthly maximum
Maximum record mensuel

Record monthly minimum
Minimum record mensuel

Monthly average
Moyen mensuel

Trace positions are approximate between flexure points
Positions des tracés sont approximatives entre les points d'inflexion

1:250,000

Comments:
Commentaires:

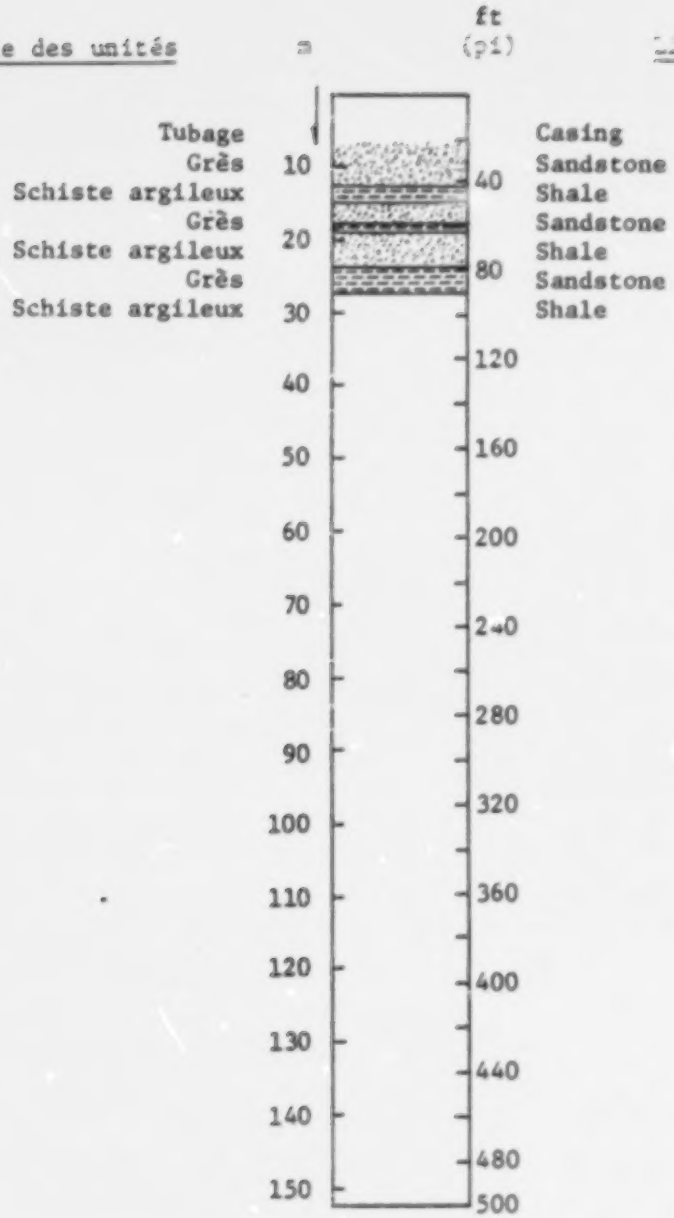
Snowmelt recharge event late Mar-May; typical 2 peak pattern with moderate amplitude.

Evénement d'alimentation de la fonte des neiges à la fin mars-mai; modèle typique de deux pointes avec amplitude modéré.

Well name Nom du puits	Recorder Type de l' Enrégistreur	Date of/de l' Instrumentation	Date of/du Termination Terminaison	Current Status Présent	Data recovery Reprise des données, %
Caraquet Rue Léger (BL-6)	A-71 Imp.	1980-05		Active Water Management Actif Gestion des eaux	95%

Lithologie des unités

Lithology of units



Puits d'observation Caraquet Rue Léger (BL-6) Observation well

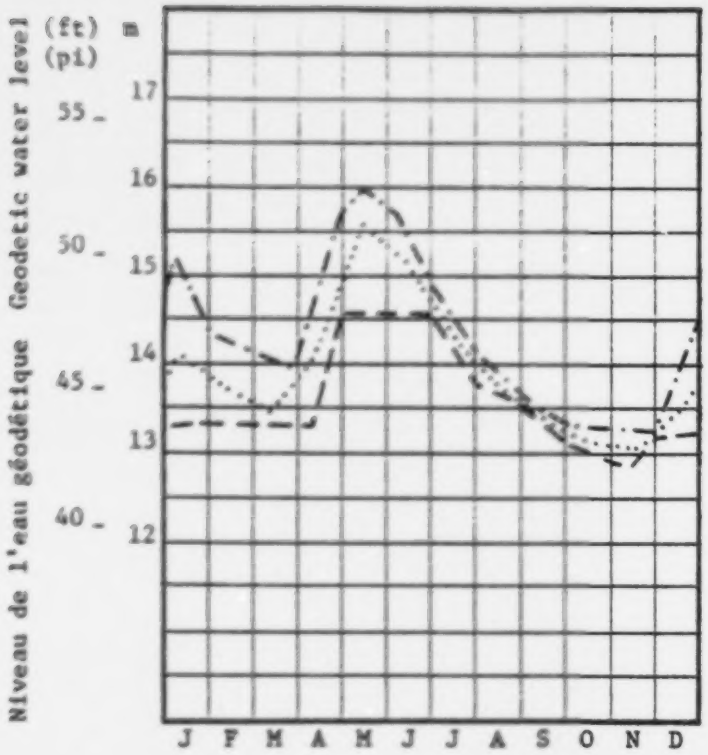
Date du forage _____ Date drilled

Niveau de l'eau statique original _____ Original static water level

Elévation du haut du tubage 18.12 m (59.46 ft.) Elevation of casing top

Origine du puits Water Supply Testwell TWC-1 (obs. well is closeby) Origin of Well

Trou de sonde TWC-1, pour approvisionnement en eau (puits d'observation est à proximité)



LEGEND-LÉGENDE
Water level traces
Graphiques des niveaux de l'eau

Record monthly maximum
Maximum record mensuel

Record monthly minimum
Minimum record mensuel

Monthly average
Moyen mensuel

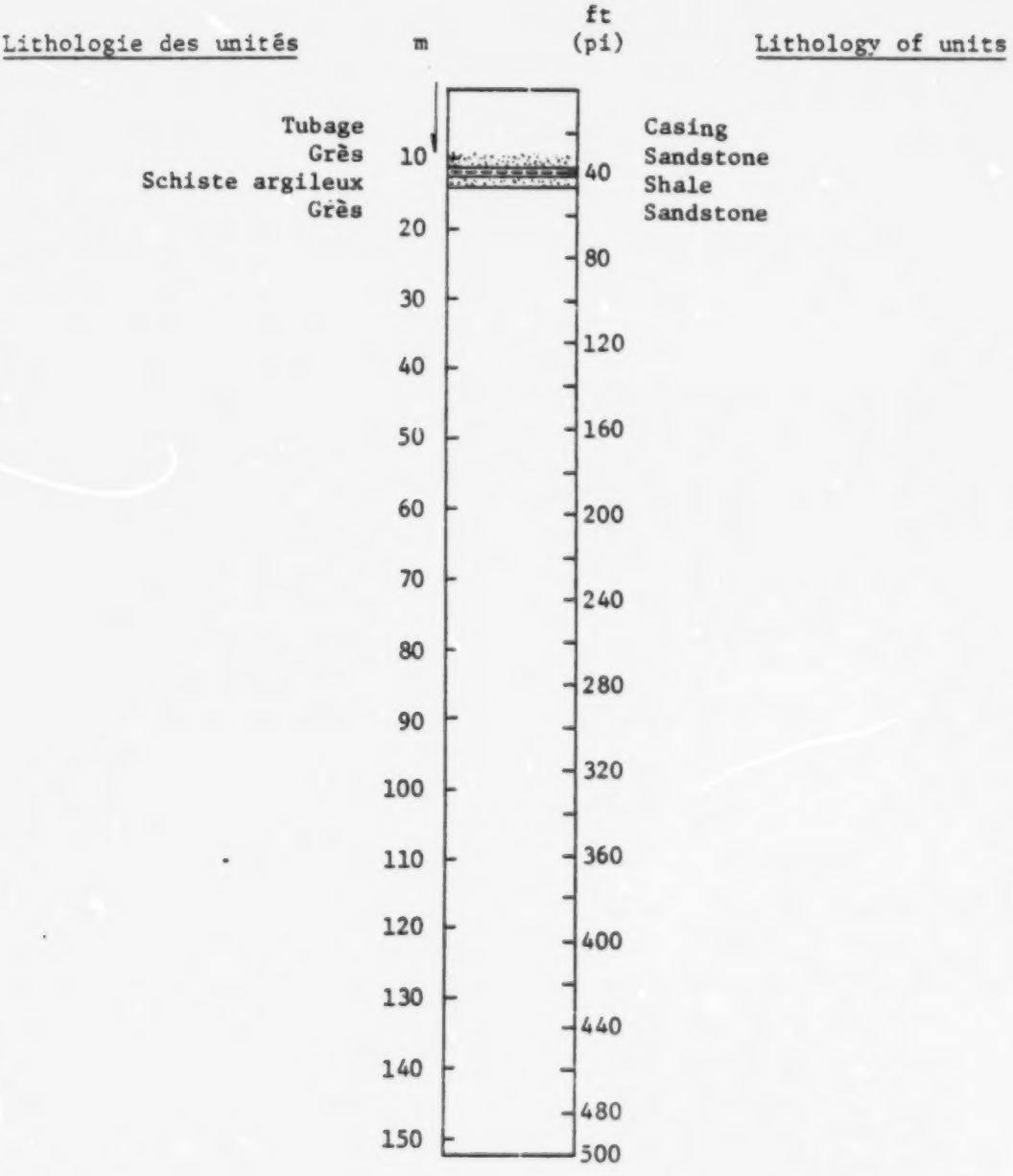
Trace positions are approximate between flexure points
Positions des tracés sont approximatives entre les points d'inflexion

1:250,000

Comments:
Commentaires:
Snowmelt recharge event April - May; fairly typical 2-peak pattern.

Evénement d'alimentation de la fonte des neiges en avril - mai; modèle assez typique de deux sommets.

Well name Nom du puits	Recorder Type Type de l'Enrégistreur	Date of Instrumentation Date de l'Instrumentation	Date of Termination Date de Terminaison	Current Status Présent	Data recovery % Reprise des données, %
Caraquet Fed. (BL-8)	A-35 Met.	1981-06-29		Active, baseline Actif, fondemental	100%



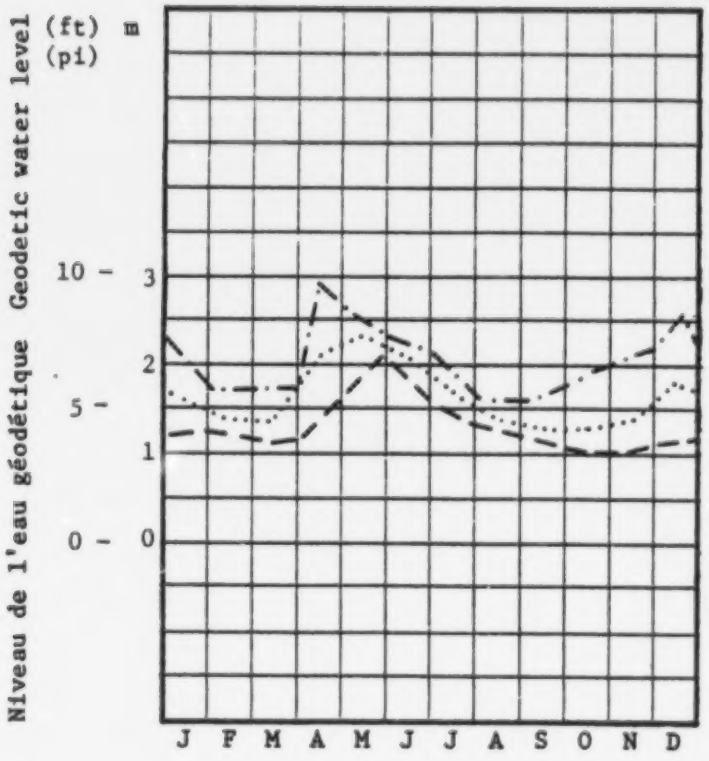
Puits d'observation Caraquet Fed. (BL-8) Observation well

Date du forage _____ Date drilled

Niveau de l'eau statique original _____ Original static water level

Elévation du haut du tubage 22.415m (73.54 ft) Elevation of casing top

Origine du puits Water Supply Testwell TWC-10 Origin of well
Trou de sonde TWC-10 pour approvisionnement en eau



LEGEND-LÉGENDE
Water level traces
Graphiques des niveaux de l'eau

Record monthly maximum
Maximum record mensuel

Record monthly minimum
Minimum record mensuel

Monthly average
Moyen mensuel

Trace positions are approximate between flexure points
Positions des tracés sont approximatives entre les points d'inflexion

1:250,000

Comments:
Commentaires:

Snowmelt recharge event Apr-May; typical 2 peak recharge pattern.

Evénement d'alimentation de la fonte des neiges en avril-mai; modèle typique de deux sommets.

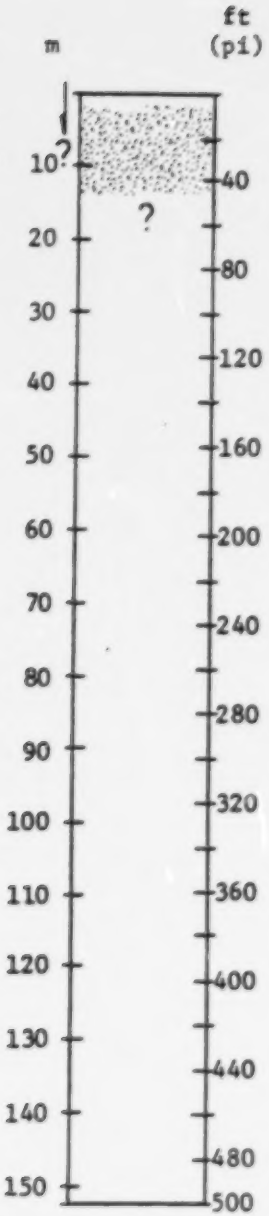
Well name Nom du puits	Recorder Type de l'Enrégistreur	Date of/de l'Instrumentation	Date of/du Termination Terminaison	Current Status Présent	Data recovery Reprise des données, %
Bas-Caraquet Allée des Frigaults (BL-7)	A-71 Imp.	1980-08		Active Water Management Actif Gestion des eaux	96%

Lithologie des unités

Tubage (longueur indéterminée)

Grès avec strates intercalées de schiste argileux

Profondeur totale indéterminée



Lithology of units

Casing (length unknown)

Sandstone with shale interbeds

Total depth unknown

(BL-7)

Puits d'observation Bas-Caraquet Allée des Frigaults Observation well

Date du forage 1966 ? Date drilled

Niveau de l'eau statique original _____ Original static water level

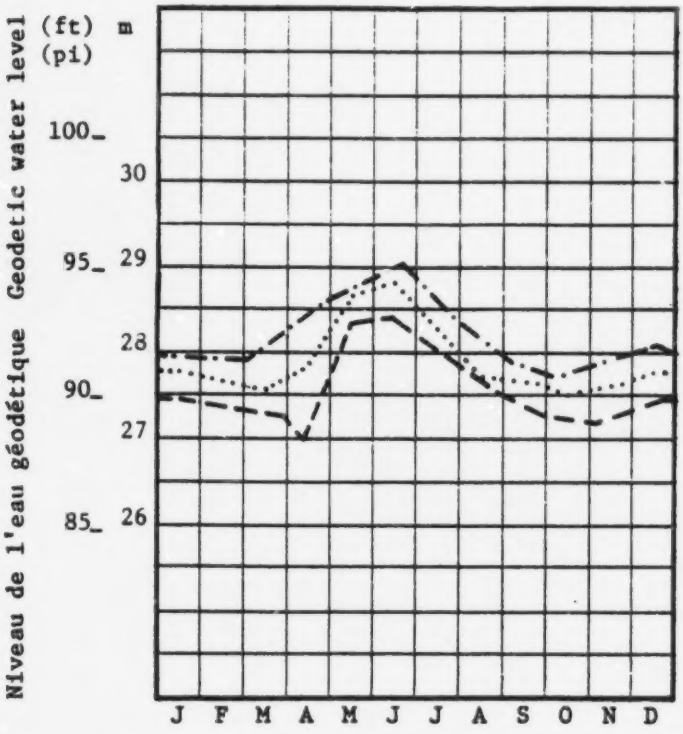
Elévation du haut du tubage 13.90m. (45.62 ft.) Elevation of casing top

Origine du puits Water supply exploration Origine du puits
Exploration pour approvisionnement en eau.

REGION 4

NORTHWESTERN NEW BRUNSWICK AND UPPER SAINT JOHN RIVER VALLEY

NOUVEAU-BRUNSWICK NORD-OUEST ET HAUTE VALLEE DE LA RIVIERE SAINT-JEAN



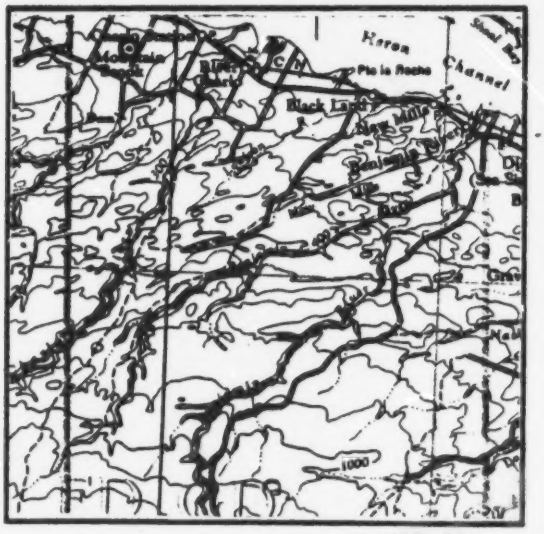
LEGEND-LÉGENDE
Water level traces
Graphiques des niveaux de l'eau

Record monthly maximum
Maximum record mensuel

Record monthly minimum
Minimum record mensuel

Monthly average
Moyen mensuel

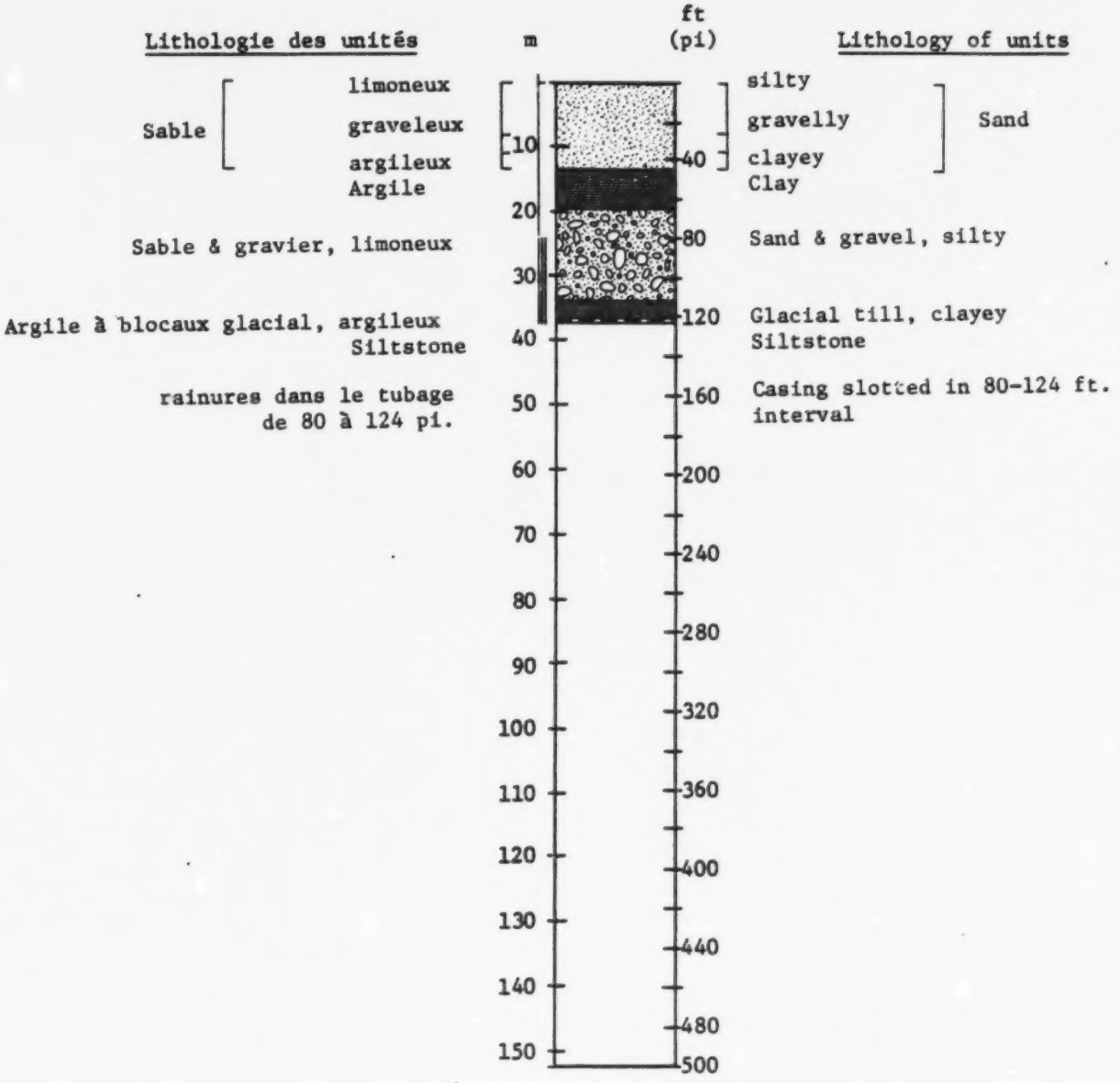
Trace positions are approximate between flexure points
Positions des tracés sont approximatives entre les points d'inflexion



1:250,000

Comments:
Commentaires:
Snowmelt recharge event April - May; appears to have a typical 2-peak pattern. Reflects pumping in nearby production well.
Evénement d'alimentation de la fonte des neiges en avril - mai; semble suivre un modèle typique de deux sommets. Reflète le pompage d'un puits de production à proximité.

Well name Nom du puits	Recorder Type de l' Enrégistreur	Date of/de l' Instrumentation	Date of/du Termination Terminaison	Current Status Présent	Data recovery Reprise des données, %
Charlo (BJ-1)	A-71 Imp.	1983-07		Active; water management Actif; gestion des eaux	88%



Puits d'observation Charlo (BJ-1) Observation well

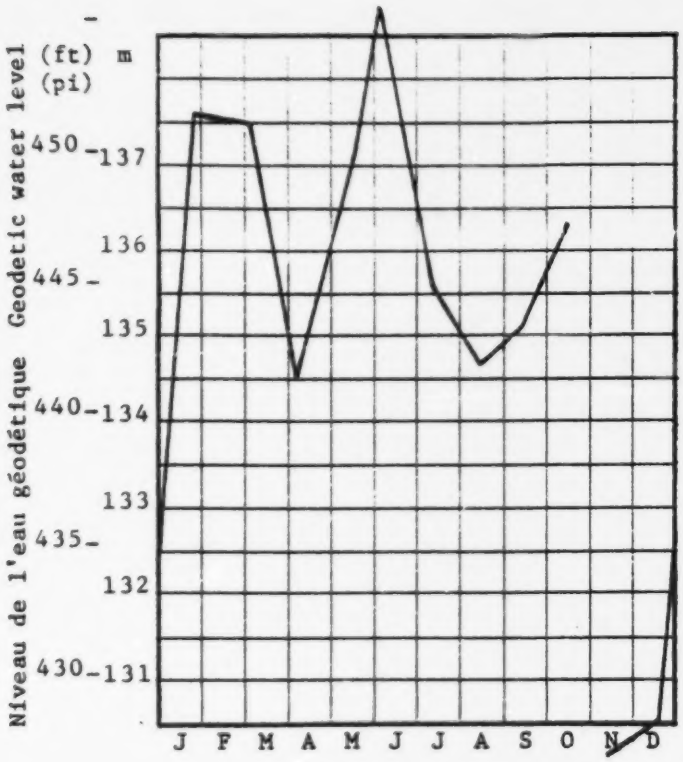
Date du forage 1975 Date drilled

Niveau de l'eau statique original 13.4m (44ft.) Original static water level

Elévation du haut du tubage 41.51m (136.20 ft.) Elevation of casing top

Origine du puits Water supply expl., TW 8/75 Origin of well

Exploration pour approvisionnement en eau TW 8/75



LEGEND-LÉGENDE
Water level traces
Graphiques des niveaux de l'eau

Record monthly maximum
Maximum record mensuel

Record monthly minimum
Minimum record mensuel

Monthly average
Moyen mensuel

Trace positions are approximate between flexure points
Positions des tracés sont approximatives entre les points d'inflexion

1:250,000

Comments:
Commentaires:
Because of recorder problems the graph is of actual hand-measured levels from Nov. 1983 to Oct. 1984.

A cause des problèmes avec l'enrégistreur, le graphique réprésente les niveaux actuels, mésurés à main entre nov 1983 et oct 1984.

Well name Nom du puits	Recorder Type de l' Enrégistreur	Date of/de l' Instrumentation	Date of/du Termination Terminaison	Current Status Présent	Data recovery Reprise des données, %
St.-Basile Wellfield Champs de Puits (AF-1)	A-71 met	1983-09		Active; water-management Actif; gestion des eaux.	Nil

Lithologie des unités

Gravier alluvial, limoneux

Argile grise, un peu de cailloux et de sable grossier

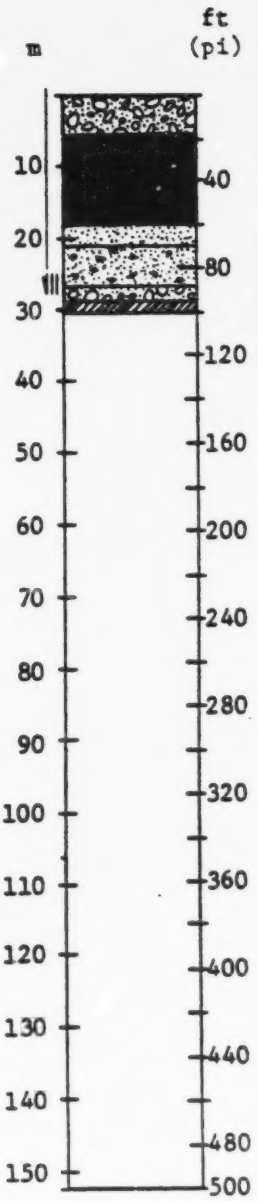
Sable gris, fin-moyen

Sable gris, moyen-grossier avec gravier

Gravier sableux gris, avec des cailloux petits à moyens

Roche de fond

Tubage avec rainure sur le dernier 10 pieds.



Lithology of units

Alluvial gravel, silty

Grey clay,
a few pebbles & grits

Fine-medium sand, grey

Gravelly medium-coarse sand, grey

Sandy small-medium pebble gravel, grey

Bedrock

Casing is slotted in bottom 10 ft.

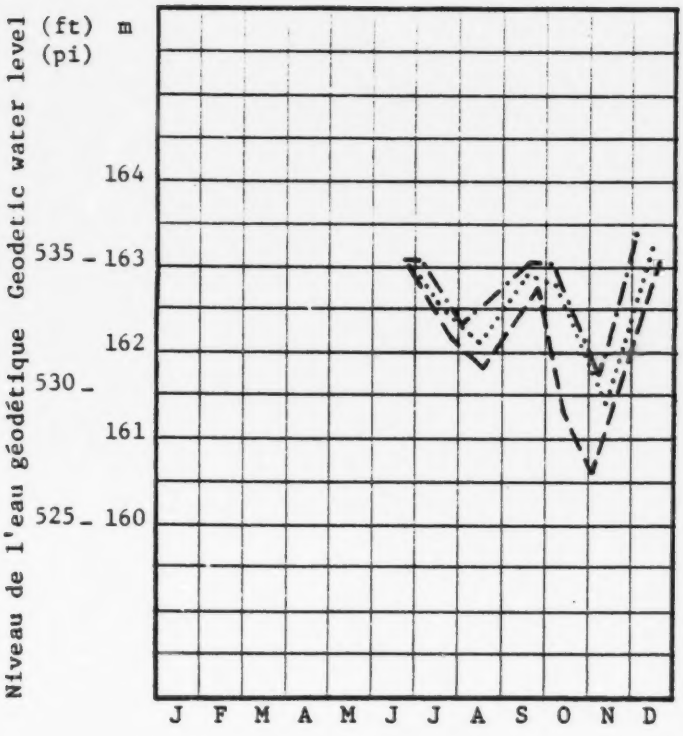
Puits d'observation St. Basile Wellfield (AF-1) Observation well

Date du forage 1983-08-25 Date drilled

Niveau de l'eau statique original _____ Original static water level

Elévation du haut du tubage 148.75m (488.01 ft.) Elevation of casing top
(dessus de la plateforme sous l'enrégistreur) (top of plate under recorder)

Origine du puits Drilled for Dept. of Environment Origin of well
Foré pour le ministère de l'Environnement



LEGEND-LÉGENDE
Water level traces
Graphiques des niveaux de l'eau

Record monthly maximum
Maximum record mensuel

Record monthly minimum
Minimum record mensuel

Monthly average
Moyen mensuel

Trace positions are approximate between flexure points
Positions des tracés sont approximatives entre les points d'inflexion

1:250,000

Comments:
Commentaires:

Useful record only for part of 1982. Experiment with improving workability of the installation.

Dossier se rapportant à une partie de l'année 1982 seulement. Expérimenter comment améliorer l'exploitation de l'installation.

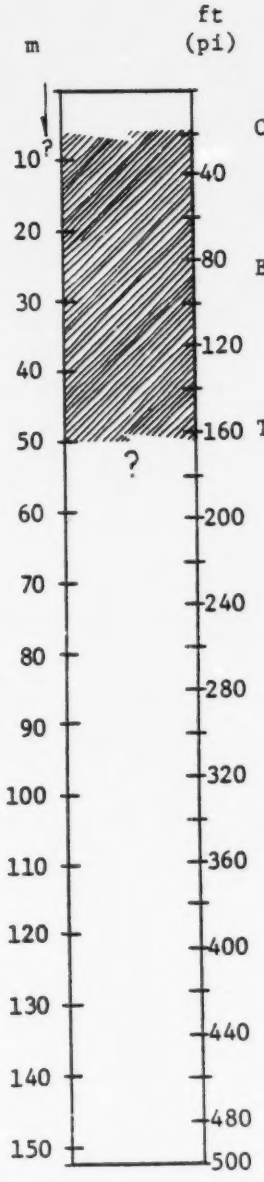
Well name Nom du puits	Recorder Type de l' Enrégistreur	Date of/de l' Instrumentation	Date of/du Termination Terminaison	Current Status Présent	Data recovery Reprise des données, %
St.-Basile Filtration Centre de filtration (AF-2)	Manual Manuel A-71	1982-06 1984-11		Active baseline Actif fondemental	

Lithologie des unités

Tubage (longueur indéterminée)

Roche de fond

Profondeur totale indéterminée



Lithology of units

Casing (length unknown)

Bedrock

Total depth unknown

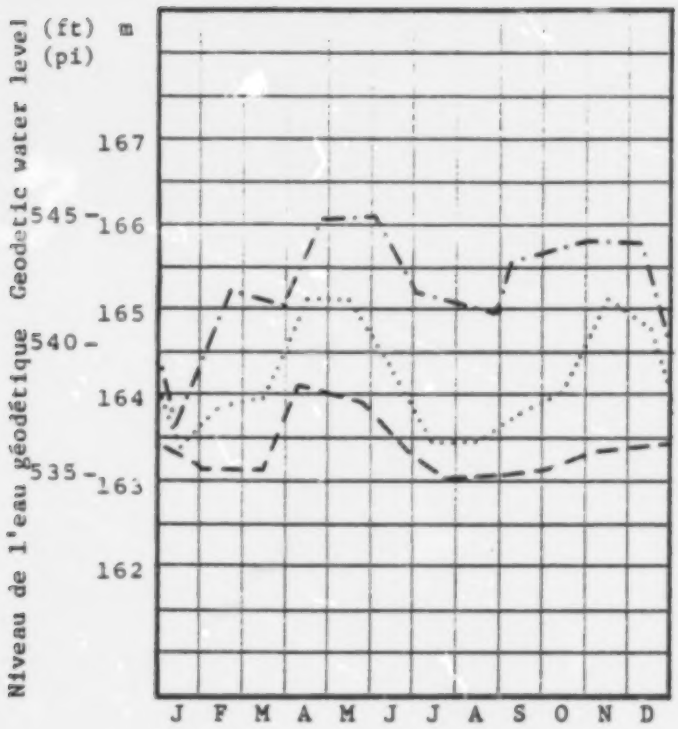
Puits d'observation St-Basile Filtration Centre (AF-2) Observation well

Date du forage de Filtration Date drilled

Niveau de l'eau statique original _____ Original static water level

Elévation du haut du tubage 164.79m (540.64 ft.) Elevation of casing top

Origine du puits Water Supply exploration Origin of well
Exploration pour approvisionnement en eau.



LEGEND-LÉGENDE
Water level traces
Graphiques des niveaux de l'eau

Record monthly maximum
Maximum record mensuel

Record monthly minimum
Minimum record mensuel

Monthly average
Moyen mensuel

Trace positions are approximate between flexure points
Positions des tracés sont approximatives entre les points d'inflexion

1:250,000

Comments:
Commentaires:

Snowmelt recharge event late Mar-early May, typical 2-peak pattern.

Evenement d'alimentation de la fonte des neiges en mars-début mai; modèle typique de deux sommets.

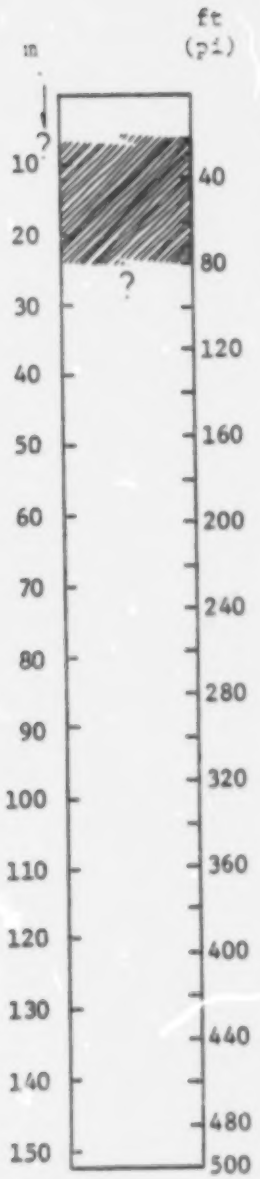
Well name Nom du puits	Recorder Type de l' Enrégistreur	Date of/de l' Instrumentation	Date of/du Termination Terminaison	Current Status Présent	Data recovery Reprise des données, %
Grand Falls NBEPC CEENB (AF-3)	F-Type Imp.	1981-01		Active baseline Actif fondemental	79%

Lithologie des unités

Tubage

Roche de fond

(Profondeur totale indéterminée)



Lithology of units

Casing

Bedrock

(Total depth unknown)

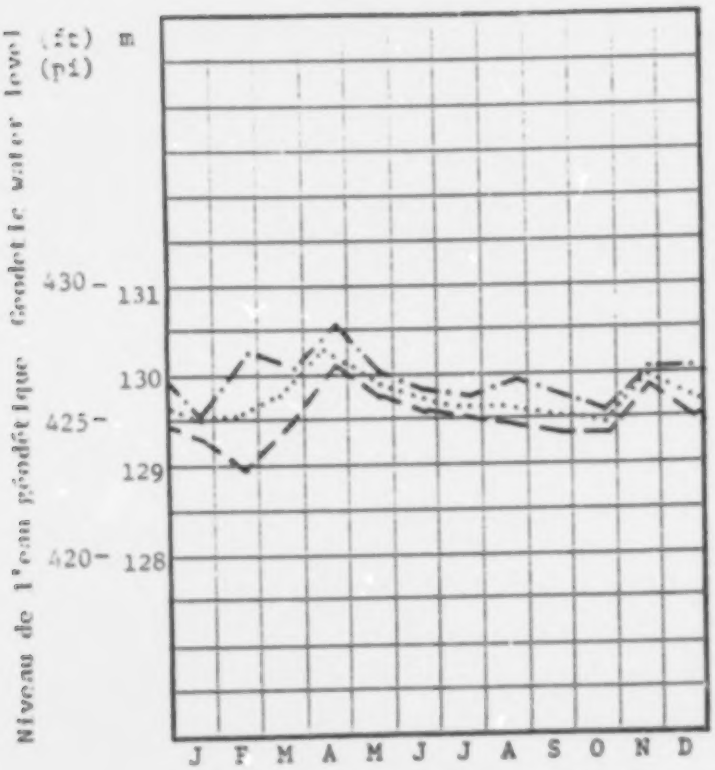
Puits d'observation CEENB Grand Falls NBEPC (AF-3) Observation well

Date du forage _____ Date drilled

Niveau de l'eau statique original _____ Original static water level

Elévation du haut du tubage 168.06m (551.38 ft.) Elevation of casing top

Origine du puits inconnu/unknown Origin of well



LEGEND-LÉGENDE
Water level traces
Graphiques des niveaux de l'eau

Record monthly maximum
Maximum record mensuel

Record monthly minimum
Minimum record mensuel

Monthly average
Moyen mensuel

Trace positions are approximate between flexure points
Positions des tracés sont approximatives entre les points d'inflexion

1:250,000

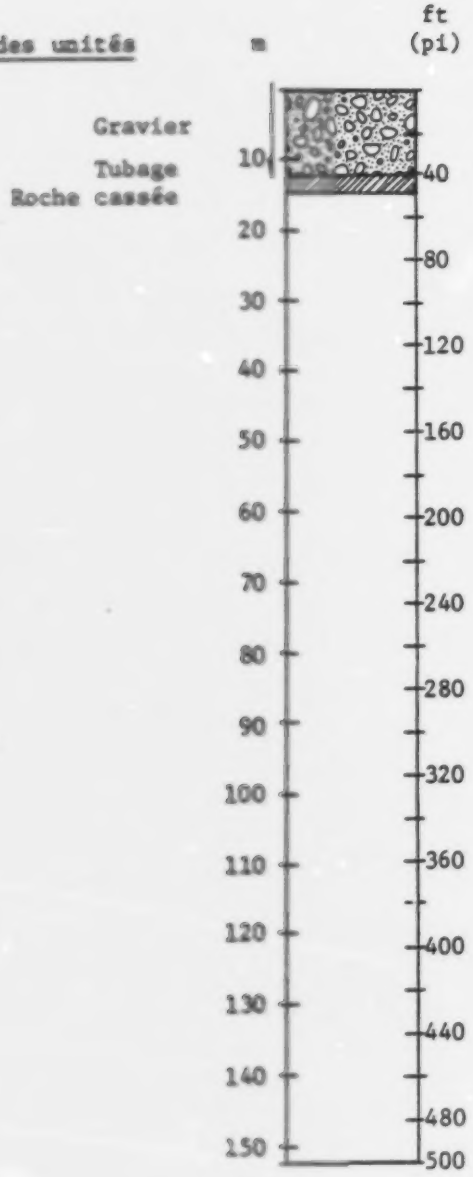
Comments:
Commentaires:

Snowmelt recharge event Mar-Apr.; typical 2-peak recharge pattern.

Evênement d'alimentation de la fonte des neiges en mars-avril; modèle typique d'alimentation de deux sommets.

Well name Nom du puits	Recorder Type de l' Enrégistreur	Date of/de l' Instrumentation	Date of/du Termination Terminaison	Current Status Présent	Data recovery Reprise des données, %
Grand Falls Pirie Potato AF-4)	Manual Manuel	1980-11		Active baseline Actif fondemental	n.a.

Lithologie des unités



Lithology of units

Puits d'observation Grand Falls Pirie Potato (AF-4) Observation well

Date du forage 1980-06-02 Date drilled

Niveau de l'eau statique original _____ Original static water level

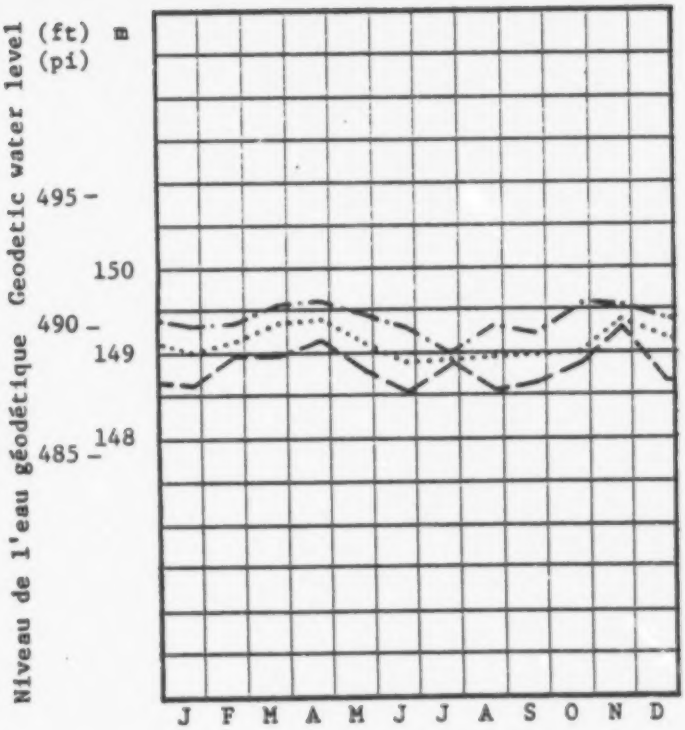
Elévation du haut du tubage 140.15m (459.80 ft.) Elevation of casing top

Origine du puits Testhole for Pirie Potato Co. Origin of well
Trou de sonde pur Pirie Potato Co.

REGION 5

SOUTHERN NEW BRUNSWICK

NOUVEAU-BRUNSWICK SUD



LEGEND-LÉGENDE
Water level traces
Graphiques des niveaux de l'eau

Record monthly maximum
Maximum record mensuel

Record monthly minimum
Minimum record mensuel

Monthly average
Moyen mensuel

Trace positions are approximate between flexure points
Positions des tracés sont approximatives entre les points d'inflexion

1:250,000

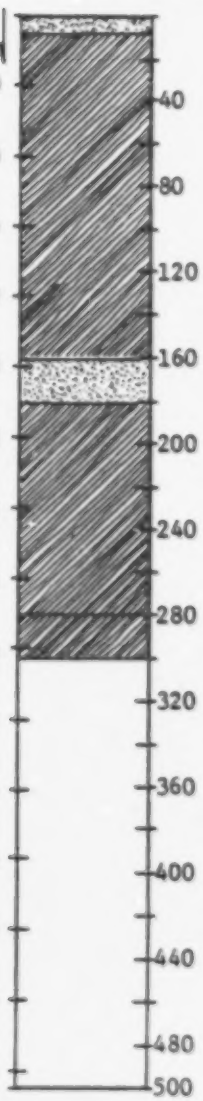
Comments:
Commentaires:

Snowmelt recharge event Mar-Apr; typical 2-peak pattern. Small amplitude reflects low topographic position, possibly a local discharge area.

Evénement d'alimentation de la fonte des neiges en mars-avril; modèle typique de deux sommets. Faible amplitude reflète la basse position topographique, possiblement un endroit local de débit.

Well name Nom du puits	Recorder Type de l' Enrégistreur	Date of/de l' Instrumentation	Date of/du Termination Terminaison	Current Status Présent	Data recovery Reprise des données, %
Harvey (AM-5)	Manual Manuel	1979-07		Active Baseline Actif Fondemental	n.a.

Lithologie des unités	m	ft (pi)	Lithology of units
Dépôts meubles (argile à blocaux argileuse)			Overburden (clay till)
Tubage	10	40	Casing
Tuf rhyolitique à coulé de cendres, de couleur rose à mauve	20	80	Pink to purple rhyolitic ash-flow tuff
	30	120	
	40		
Quartzite gris	50	160	Grey quartzite
	60	200	
Tuf mauve à coulé de cendres	70	240	Purple ash-flow tuff
	80		
Roche ignée felsique dure et grise	90	280	Hard grey felsic igneous rock
	100	320	
	110	360	
	120	400	
	130	440	
	140	480	
	150	500	



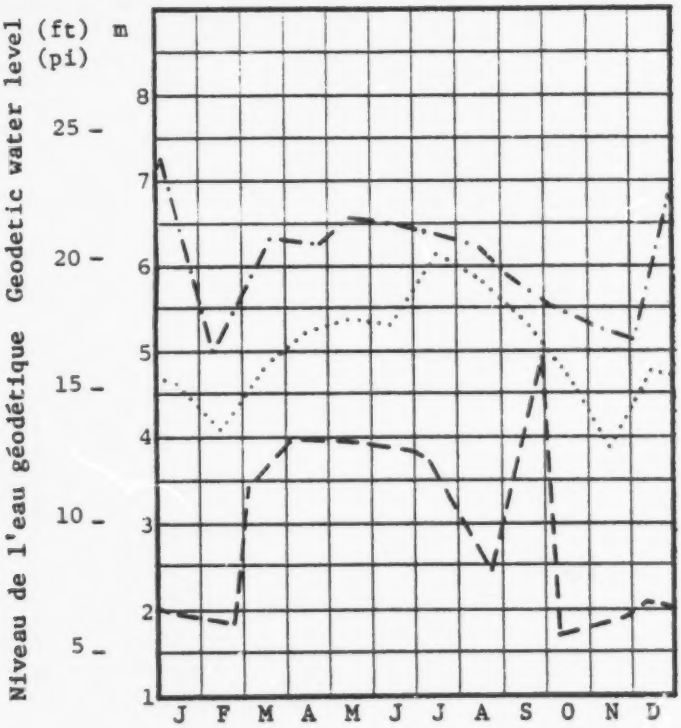
Puits d'observation Harvey (AM-5) — Observation well

Date du forage 1976-12-17 — Date drilled

Niveau de l'eau statique original 1.8m (6 ft.) — Original static water level

Elévation du haut du tubage 150.58m (494.04 ft.) — Elevation of casing top

Origine du puits Drilled for NBDOE (Arsenic testhole #1) Origin of well
Foré pour le M.E.N.B. (trou de sonde pour arsenique #1)



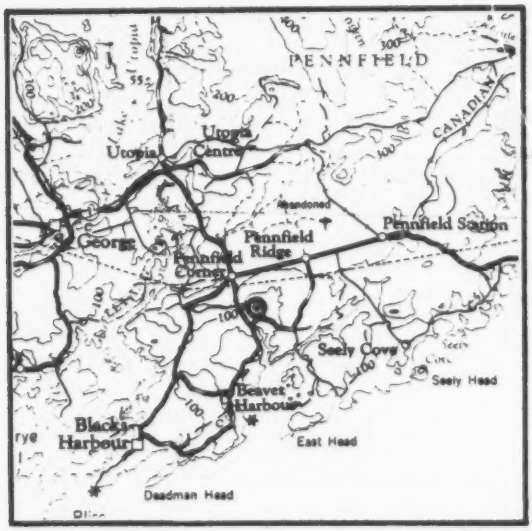
LEGEND-LÉGENDE
Water level traces
Graphiques des niveaux de l'eau

Record monthly maximum
Maximum record mensuel

Record monthly minimum
Minimum record mensuel

Monthly average
Moyen mensuel

Trace positions are approximate between flexure points
Positions des tracés sont approximatives entre les points d'inflexion



1:250,000

Comments:
Commentaires:

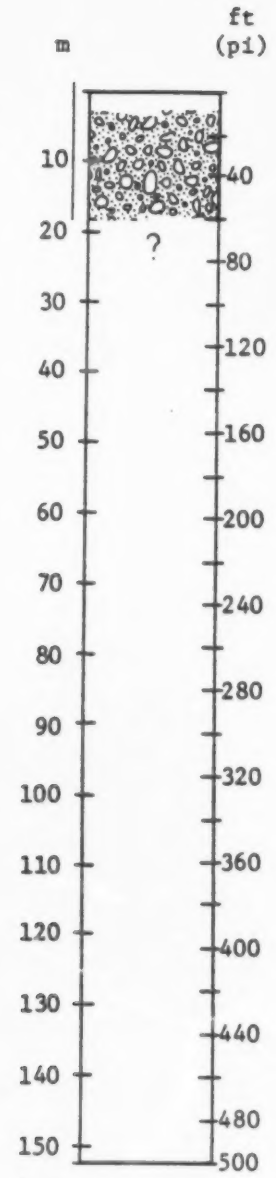
Snowmelt recharge event Mar-Apr; average graph is atypical, peaking in July. Level declining consistently every year, indicating net overpumping of nearby wells.

Evénement d'alimentation de la fonte des neiges en mars-avril; le graphique moyen est anormal, ayant le sommet en juillet. Le niveau en déclin constant à chaque année indique un net surpompage des puits à proximité.

Well name Nom du puits	Recorder Type de l' Enrégistreur	Date of/de l' Instrumentation	Date of/du Termination Terminaison	Current Status Présent	Data recovery Reprise des données, %
Pennfield (AQ-1)	F-type Imp.	1980-12		Active Water Management Actif Gestion des eaux	86%

Lithologie des unités

Lithology of units



Gravier — Gravel

Tubage — Casing

Profondeur totale incertaine — Total depth uncertain

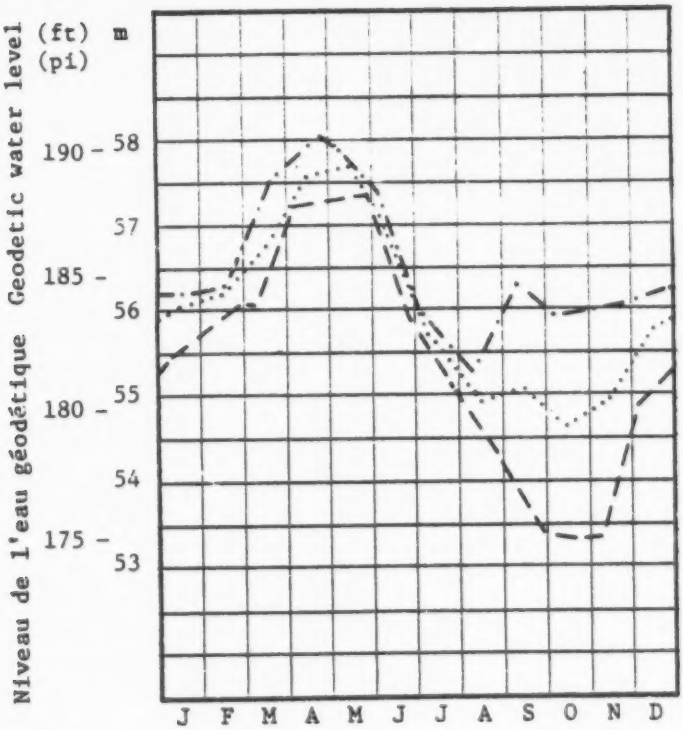
Puits d'observation Pennfield (AQ-1) — Observation well

Date du forage — Date drilled

Niveau de l'eau statique original — Original static water level

Elévation du haut du tubage 16.45m (53.97 ft.) — Elevation of casing top

Origine du puits Water supply exploration — Origin of well
Exploration pour approvisionnement en eau.



LEGEND-LÉGENDE
Water level traces
Graphiques des niveaux de l'eau

Record monthly maximum
Maximum record mensuel

Record monthly minimum
Minimum record mensuel

Monthly average
Moyen mensuel

Trace positions are approximate between flexure points
Positions des tracés sont approximatives entre les points d'inflexion

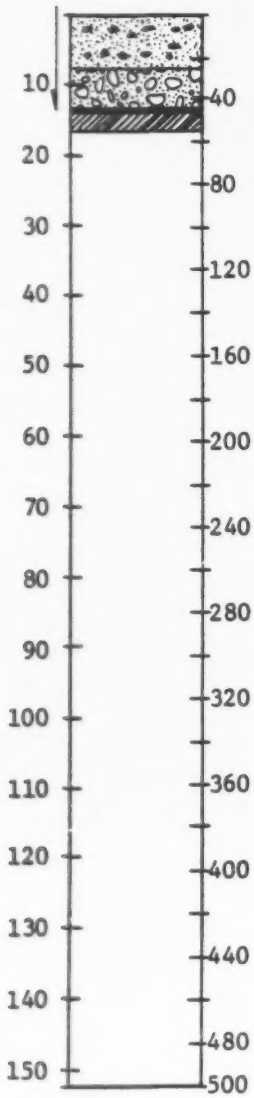
1:250,000

Comments:
Commentaires:
Snowmelt recharge event Mar-Apr; recharge pattern is 2-peaked, with Spring peak dominant. Deep decline in Fall indicates pumping wells draw substantially on aquifer storage.

Evénement d'alimentation en mars-avril; modèle d'alimentation à deux sommets, avec celui du printemps plus important. Extrême déclin en automne indique que les puits de pompage puisent considérablement sur la réserve de l'aquifère.

Well name Nom du puits	Recorder Type de l' Enrégistreur	Date of/de l' Instrumentation	Date of/du Termination Terminaison	Current Status Présent	Data recovery Reprise des données, %
St. Stephen Maxwell Crossing (AR-1)	F-type Imp.	1982-07		Active Water Management Actif gestion des eaux	86.1%

Lithologie des unités	m	ft (pi)	Lithology of units
Sable grossier: lentilles de gravier			Sand, coarse: gravel lenses
Gravier grossier, sub-arondit; matrice sable très grossier.	10	40	Gravel, coarse subrounded; matrix very coarse sand.
Argile à blocaux glaciale, argileuse (bas du tubage)			Glacial till, clayey (casing foot)
Roche de fond	20	80	Bedrock
	30	120	
	40	160	
	50	200	
	60	240	
	70	280	
	80	320	
	90	360	
	100	400	
	110	440	
	120	480	
	130	500	
	140		
	150		



(AR-1)

Puits d'observation	St. Stephen Maxwell Crossing	Observation well
Date du forage	1977	Date drilled
Niveau de l'eau statique original	3.35m (11')	Original static water level
Elévation du haut du tubage	63.31m (207.70')	Elevation of casing top
Origine du puis	Water supply exploration, test site #2 Exploration pour approvisionnement en eau, site d'essai #2	Origin of well

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